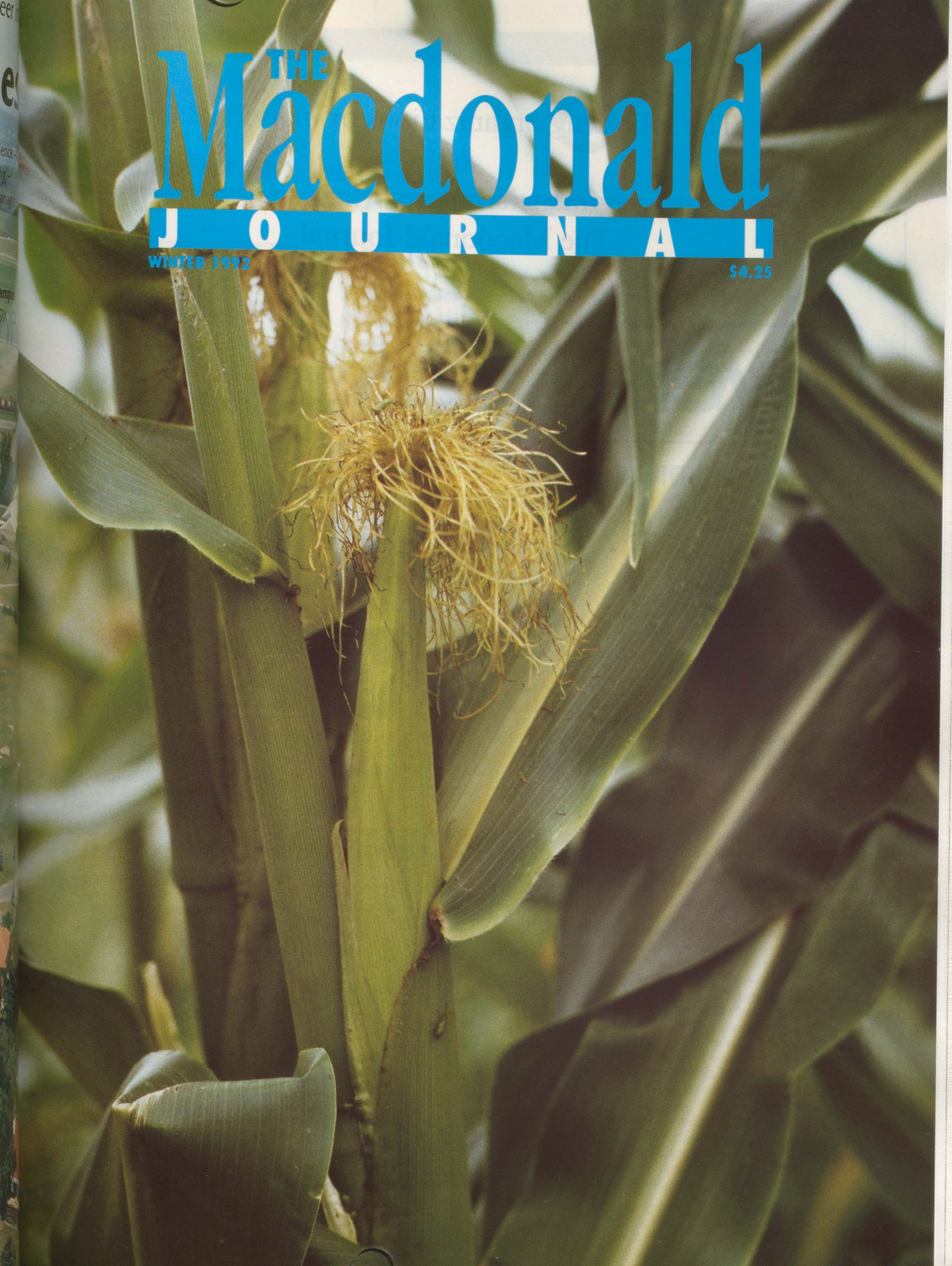

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The QWI

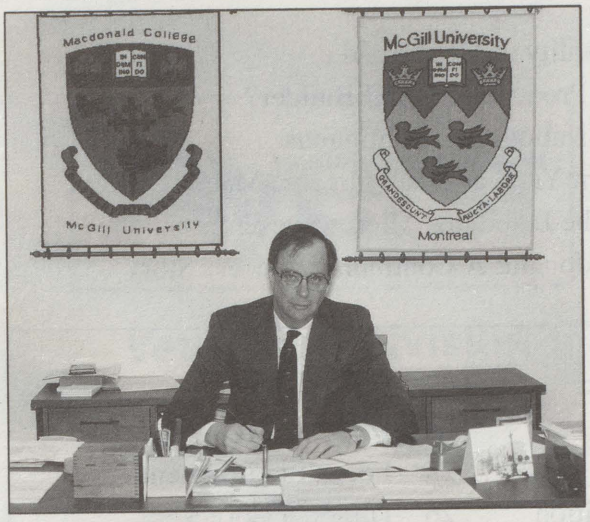
The Quebec Women's Institutes' section of The Macdonald Journal containing information on current activities and up-coming events at the Branch, County, Board, and Provincial levels may be found on pages 28 to 31.

Cover

Our striking February cover by David Wees, Lecturer in the Department of Plant Science, reminds us that winter is on the wane and that a new year of seeding, of tending the crops, and of harvesting lies ahead. The cover is appropriate in that our lead articles are on research undertaken at Macdonald and internationally on cereal crops. Nationally, corn, barley, oats, soybeans, and bread wheat are discussed and, internationally, we look at work being done on corn, rice, intercropping, and post-harvest engineering. Thanks to the co-ordinating efforts of Dr. A. F. MacKenzie of Renewable Resources, we have taken an interdisciplinary approach to the subject of cereal crops and have contributions from staff in three departments: Renewable Resources, Plant Science, and Agricultural Engineering. I would like to thank the professors in these departments for their interest and their contributions. A glance at the feature articles listed above is an introduction to some very informative reading about the work they and their graduate students are doing.

From the Dean's Desk

Universities Should Lead by Example



Environmental concerns are the concern of all, not only for ourselves, but more importantly for our children and our children's children. The world community of universities recognizes its responsibility with respect to this concern particularly from the perspective that it is the universities which educate most of the people who develop and manage society's institutions. The university is a microcosm of the larger community, and thus the manner in which it carries out its daily activities is an important demonstration of ways to achieve environmentally responsible living.

In October 1990 at Talloires, France, a group of university presidents from around the world met to prepare an environmental declaration for the universities. McGill has signed this declaration and all universities of the world are being asked to sign it to bind them to the fundamental principles of environmental enhancement.

In December 1991 I had the opportunity to attend an international conference in Halifax entitled "Creating a Common Future – University Action for Sustainable Development" sponsored by Dalhousie University, the Association of Universities and Colleges of Canada, the International Association of Universities, and the United Nations University. The broad objectives of this conference were to formulate mechanisms by which universities of the world could participate in the Earth Summit (United Nations Conference on Environment and Development) to be held in Brazil in June of this year.

Specifically, the first objective of the conference was to ask how universities could ensure that the appropriate questions were on the agenda for the Earth Summit in Brazil and how universities, with their special place in society, could help implement throughout the world the recommendations that will emanate from the Earth Summit. The second objective was to identify specific ways in which individual universities could lead by example, both with respect to their academic programs by providing leadership as a role model, and with respect to environmentally responsible living. At Macdonald, we have taken action on both of these fronts. We have reviewed and are continuing to review our teaching and research programs in relation to their relevance and sensitivity to the environment. With respect to serving as a role model, we have established a committee to make recommendations on all of our practices at Macdonald and their impact on the environment so that we can lead by example. If we are to preserve and enhance the environment for future generations, we must not only pay lip service to the environment but also lead by example.

Roger B. Buckland
Vice-Principal (Macdonald Campus) &
Dean, Faculty of Agricultural and
Environmental Sciences

The Macdonald Journal Endowment Fund

Our most sincere thanks for recent donations to The Macdonald Journal Endowment Fund. This fund was established with a $10,000 donation from a Macdonald graduate about two years ago. Graduates and others continue to add to the fund, thus building it up in the hope that the Journal may become more self-sufficient. We thank donors to this fund and others who have recently made special gifts to the magazine.

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We sincerely thank Dr. J.F. Gerard Millette, retired professor from the Department of Renewable Resources, for continuing to add to the Millette Macdonald Fund, a fund that provides annual subscriptions for Guidance Counsellors in various high schools and CEGEPs.

Research into Cereal Quality at Macdonald

y Professor D. Smith
Department of Plant Science

Cereal Quality and Its Importance

ast emphasis on improving cereal crop roduction, through both management and enetics, dealt largely on increasing the uantity of cereal produced and, in this egard, was very successful. More recently embers of the agricultural community nd, in fact, consumers of agricultural roducts have become more concerned ith the quality of the produce. As under- anding of what constitutes quality in each ereal crop or, as is often the case, for a articular type of wheat, barley, corn, etc., increased, the ability to determine the ffects of genetics and management has mproved. It seems probable that in the ear future cereal quality may become a reater focus of interest than simple yield.

uality in Corn

orn-soybean intercropping for high pro- in silage production

orn silage is produced as livestock feed. It high in energy but protein deficient. To llow for the proper use of all the energy ontained in corn silage, a protein supple- ent must be added. This is usually in the rm of expensive ($0.80 kg^{-1}) soybean eal. Intercropping is the practice of grow- g two or more crops on the same field at e same time. It was once a common prac- ce and is still widely used in third world untries. Dr. D. Smith and his students, R. artin (now a professor at the Nova Scotia gricultural College), and Chantal Hamel ow a post-doctoral fellow at the niversity of Montreal) set out to test the otential of intercropped corn and soybean r the production of high protein silage. uch of this work was conducted in col- boration with the Ottawa Agriculture anada Research Station. Various mixtures corn and soybean were tested, and it was und that with the correct mix (100 per nt corn, 50 per cent soybean) we can get e same total silage yield as a corn onocrop, but the protein content is 2 per nt higher, leading to a reduction in the amount of soybean meal that must be purchased to supplement the feed. For some livestock, protein levels are high enough that no additional soybean meal is required. For other livestock reduced protein purchases are required. The value to the grower is about $250 ha^{-1}, largely due to reduced costs for soybean meal purchases. In addition intercropping soybean with the corn reduced the level of corn borer infestation in the corn, thus reducing the need for insecticide application. In addition some of the nitrogen fixed (taken from the air) by the soybean crop was leaked into the soil and taken up by the corn plants. Nitrogen of this type is not normally available to cereal crops, so intercropping has the potential to lessen the requirement for N fertilizer application to corn.

Nitrogen fertility and grain-corn protein

Corn grain is high in energy and is generally regarded as a source of energy in livestock rations. Corn grain is, however, protein deficient. To allow for the proper use of energy, protein supplement, usually in the form of soybean meal, must be added. It is well known that adding increased levels of nitrogen fertilizer results in elevated corn protein concentrations and should result in decreased requirements for soybean meal purchases. However, corn seeds also contain reasonable levels of oil (the corn oil used to make many brands of cooking oil). Oil is an excellent source of energy. While starch (the main component of corn seeds) and protein contain similar amounts of energy on a per gram basis, oil contains about 2.25 times the amount of energy found in starch or protein. It is not known whether increased protein concentrations in corn seeds, due to increased additions of N fertilizer, are due to reduced starch levels (in which case the total energy content of the seeds is unchanged) or to reduced oil levels (in which case the total energy level of the seeds is reduced). Dr. D. Smith and one of his graduate students, Mr. F. Zhang, in collaboration with Dr. A. F. MacKenzie of the Department of Renewable Resources, set out to determine which was the case. The research was conducted in southwestern Quebec for three years.

The results have shown that the increased protein is, in fact, associated with a decrease in the starch concentration, so that the energy content is unchanged. Thus increased nitrogen fertilizer applications to corn will result in improvement of one quality variable, protein content, without an adverse effect on another, energy content.

Quality and high lysine corn

The protein contained in corn is deficient in several essential amino acids (those essential to humans and most livestock); this deficiency is most severe for the amino acid, lysine. About 20 years ago mutants were discovered which contained protein high in lysine; however, the seeds of this type of corn plant were soft and the yields were low. Subsequent plant breeding efforts have steadily improved the quality of these seeds. Dean Spaner, a graduate student with Dr. Diane Mather, has been examining the characteristics of a group of early-maturing "quality protein maize" (QPM) inbred lines of corn. These lines were developed by Dr. R. I. Hamilton, a Macdonald graduate, and currently the corn breeder at the Agriculture Canada Research Station in Ottawa. Dr. Hamilton developed these lines from populations of QPM material obtained from CIMMYT, an international research station in Mexico, which originally came from material carrying the opaque-2 mutation, which was found in high lysine containing grain at Purdue University in 1964. The QPM material from Mexico differs from other high-lysine corn in that the CIMMYT breeders have selected to overcome the problems of high-lysine opaque-2 material, low yield and poor physical grain quality. The Agriculture Canada inbreds are unique in that they are probably the earliest maturing high lysine material in the world. Mr. Spaner evaluated these as inbreds and in hybrid combinations and found some to be as high-yielding as current commercial

hybrids. Unexpectedly, some also had resistance to fusarium ear rot. However, these resistant types are not early enough for our short growing season. This will be a corn breeding objective for the next few years.

Quality in Small-Grain Cereals

Nitrogen fertilizer applications for the production of bread wheat in Quebec

Bread wheat produced in western Canada is generally of a higher baking quality (higher protein content and lower ash content) than that produced in eastern Canada. Protein content can be increased in eastern Canada by the application of higher levels of N fertilizer. However the exact effect of N additions on protein level and all of the subsequent effects on baking quality and ash content are unknown. Higher fertilizer applications also have a greater potential for ground water pollution. Research undertaken tested the effect of a range of N fertilizer applications on the bread wheat yield, protein content, ash content, baking quality and, also, associated potential for ground water pollution. Dr. D. Smith and Micheline Ayoub, a graduate student, set out to determine the effects of N fertility level and of applying the fertilizer all in the spring or in a split application with part of it added in the spring and part when the wheat was heading. The experiment was run at two sites over two years. The addition of higher levels of nitrogen resulted in higher protein levels – high enough for bread wheat quality. These higher levels of added nitrogen improved all of the baking quality aspects, such as hardness, falling number value, flour yield, and loaf volume. The split application of N resulted in higher levels of protein with a shorter crop, thus less danger of lodging, less potential for ground water pollution (lower end-of-season soil NO_3 levels) and higher yields. It seems that N applied at heading is not able to contribute to the development of the wheat crop's stems and leaves and can only be used for seed protein development. It also seems that nitrogen applied around heading is less likely to move with rain water down through the soil and out of reach of the roots, as when it moves down through the soil it must pass through a well-developed layer of wheat roots, which takes much of it up into plant tissues. This is not true of nitrogen applied in the spring. More of it moves below the area where roots will develop and can potentially contribute to ground water pollution. The split application of N will allow a reduction in N fertilizer of about 50 kg ha. Finally, the application of higher levels of N fertilizer did not effect ash levels.

Intensive management of barley: quality and yield

European small grain cereal producers have been using intensive management practices for several decades. These methods have resulted in very high yields, in excess of 10 t ha^{-1}. The main input is high levels of N fertilizer, but this results in a very tall, lodging-prone and a very lush, disease-prone crop. To reduce the risk of lodging, plant growth regulators are applied. These substances affect the hormone balance of the plants and, when properly applied, result in shorter, less lodging-prone plants. To combat the elevated risk of disease, fungicide is applied. In addition intensive management practices usually involve the use of narrower rows.The use of a high level of N fertilizer should result in higher protein levels in small-grain cereal seeds. Like corn, small-grain cereal seeds are deficient in protein and so must be supplemented when fed to livestock. The usual form of this supplement is soybean meal. As barley is the most widely produced small grain cereal crop in Quebec, we tested the effects of the intensive management inputs on its development, yield and quality. Dr. D. Smith and several graduate students, B. L. Ma, P. Bulman and W. Maloba, set out to determine the feasibility of using these methods in Quebec barley production. The experiments were conducted for four years. Protein increased with increasing N fertilizer application, resulting in a decreased need for protein supplements in feed rations; however, the additional cost of the N fertilizer was often greater than the saving in soybean meal purchase. Unexpectedly, the application of the plant growth regulator also increased protein levels. However, the use of plant growth regulators seemed to be a high risk proposition; in three out of four years the application of plant growth regulators resulted in decreased yields. It seems that in hot, dry years when the crop is experiencing a certain amount of stress, the plant growth regulator acts as an additional stress. The application of fungicide decreased the level of leaf diseases, but, as these were never very high, this did not result in increased yields and, therefore, constituted wasted money. On the positive side, the use of narrower rows (10 versus 20 cm) resulted in increased yields in two out of four years. The increases were in the range of six to 12 per cent. It seems that the use of intensive management inputs – with the exception of narrower rows – is not justi-

Seeding small-grain cereals at the Lods Research Centre for research trials.

Experiments on row width and barley yield.

fied in Quebec. Conditions are very different in Europe. First, the European Economic Community's subsidy program guarantees high prices for the grain produced in Europe, regardless of world demand; therefore, yield increases sufficient to cover the cost of the additional inputs in Europe do not cover the additional costs here in North America. The climate is quite different. In northern Europe the summers are long and cool, ideal growing conditions for small grain cereals. The small grain cereal growing season in most of Europe is about twice as long as here in Quebec. Furthermore, the cool summers in Europe insure that the crops there generally develop in the absence of serious heat or drought stress. In Quebec there is often a period of heat and drought stress in July. The use of narrower rows, however, does seem justified and should lead to higher yields for Quebec barley producers.

Quality in Oats for Human Consumption

While the traditional market for oats-horse feed-has diminished during the course of this century, the 1980s saw a dramatic expansion in the production of oats for human consumption. This was largely due to the discovery that the beta-glucans contained in oat grain and food products containing oats may reduce the level of cholesterol in the blood of people eating them. Dr. D. Mather and D. G. Humphreys, a graduate student, have been examining methods, both genetic and managerial, of increasing the beta-glucan content of oats. Their data to date indicate that there is a considerable range of beta-glucan concentration between cultivars. At some sites the cultivar with the highest concentration of beta-glucan had almost twice the level of the cultivar with the lowest level. This indicates potential for increase in the beta-glucan level by plant breeding methods, and Dr. Mather and Mr. Humphreys now have this work underway. Investigation of management parameters has shown that higher levels of N fertility tend to result in somewhat higher levels of beta-glucan. The planting date also has a strong effect with later seeding resulting in higher beta-glucan levels.

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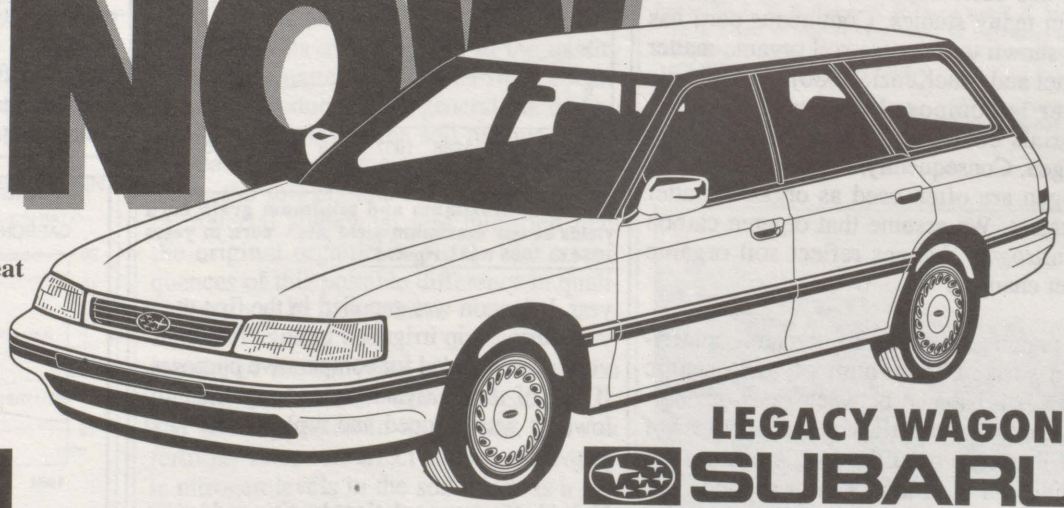

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Continuous Grain Corn Production – Soil Builder?

by Professor A. F. MacKenzie and B. C. Liang
Department of Renewable Resources

Corn provides energy, protein, and minerals in copious amounts. Since its introduction into Quebec over the past 30 years, corn has revolutionized the farming industry by providing a crop that doubled grain yields over other cereal crops. No wonder that corn has made such headway, being now planted on a greater area than any other cereal in Quebec.

Yet corn has been singled out as a soil degrading crop that causes environmental damage through loss of soil organic matter, increased soil erosion and compaction, and reduced soil quality. Is there a possible way that corn can provide those immense yield benefits without excessive soil damage?

The benefits with corn can be phenomenal. It has been estimated that each North American consumes about 1.6 kg corn per day – not only directly, but in meat, dairy products, sweeteners, starch, and in miscellaneous uses such as packaging and plastic. Thus, the idea of removing corn from our food system is unreasonable. Corn is here to stay. We must learn to live with this phenomenal crop and, if possible, love it from an environmental perspective.

Corn has been implicated in soil degradation in many studies. Continuous corn has been shown to decrease soil organic matter (Martel and MacKenzie 1980). Soil organic matter is composed of complex humic materials containing organic carbon and nitrogen. Consequently, organic carbon and nitrogen are often used as organic matter indicators. We assume that organic carbon and nitrogen changes reflect soil organic matter changes.

Soil organic materials are dynamic materials in soils. The amount of soil organic matter is a balance between rates of addition of organic materials and rates of loss of these materials from the soil. Additions are generally in the form of crop residues and animal manures. Losses are through decomposition of residues by macro and microorganisms in the soil.

Is it possible under today's higher crop yields and better management to increase crop residue returns and to use corn as a soil improver in Quebec? If corn yields and residue returns are large enough, soil organic matter should increase.

To test this idea we can sample a long-term corn management experiment which began in 1984 on the Macdonald Campus of McGill University. This study was set up to determine the maximum grain corn yield potential for Quebec. The experiment involved the use of two fertilizer rates (normal and high), two population densities (normal and high), normal and irrigated plots, and two hybrids. The purpose was to determine the interaction among these inputs on soil organic matter levels. Populations were 65,000 and 90,000 plants per hectare, fertilizer rates were 170-100-170 kg N/ha P_2O_5 K_2O and 400-300-400 N P_2O_5 K_2O (Table 1). For five years liquid cattle manure was applied to supply micronutrients at 4000 kg of dry matter and 70 kg N per hectare per year. Irrigation was supplied in the first three years using drip irrigation tubing. Two cultivars were included for comparative purposes. If one of the cultivars yielded significantly lower it was dropped and replaced the next year.

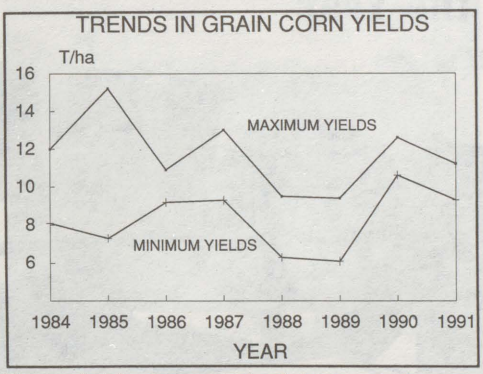

Figure 1. Maximum and minimum grain corn yields at our maximum yield site – corn in years 1984 to 1986 was irrigated.

Hybrid effects, population density, and irrigation effects on the soil were small, and there was no influence of these factors on soil organic matter. Time and fertilizer effects on the soil were found, however. Consequently, we will look at these two factors only in corn production and soil organic matter.

Maximum yields varied from 9.4 tons per hectare of grain in 1989 to 15.2 tons per hectare in 1985 (Figure 1). Minimum yields varied from 6.1 tons per hectare in 1989 to 10.6 tons in 1990. Stover inputs over the same period were calculated in tons of carbon per hectare and varied from 3.0 to 4.5 tons carbon per hectare depending on the year. The carbon from the added manure amounted to approximately 1.6 tons per year on the average.

The organic carbon level in the soil was influenced by fertilizer rates and by time. Over the six years of production the high rate of fertilizer increased the carbon return over the normal rate of fertilization by about two tons carbon per hectare. The net result was that organic carbon increased from 40.7 tons per hectare in 1984, to 43.4 tons per hectare in 1987, to 48.0 tons per hectare in 1990. During that time, 21.3 tons per hectare of organic carbon were supplied in the corn stover and 9.6 tons per hectare in the manure. Thus conversion of organic carbon residue and manure into soil organic carbon was about 23 per cent.

The net effect was that time and high fertilizer resulted in an increase in organic carbon concentration in the soil (Figure 2).

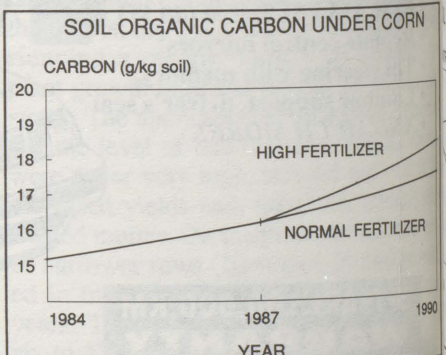

Figure 2. Increases in soil organic carbon under grain corn at two fertilizer levels.

Table 1. Fertilizer applications from 1984 to 1989[a]

N	P	K	Product	Method of application
kg ha-1				
Normal rate				
149	0	0	Urea[b]	SPPI[c]
21	44	0	MAP	Banded
0	0	116	Potash	SPPI
0	0	25	PMS	SPFI
Total				
170	44	141	–	–
High rate				
0	44	0	TPS	FI
0	0	83	Potash	FI
149	0	0	Urea	SPPI
42	88	0	MAP	Banded
0	0	224	Potash	SPPI
0	0	25	PMS	SPPI
105	0	0	AN	SD (early June)
52	0	0	AN	SD (early July)
52	0	0	AN	SD (end of July)
Total				
400	132	332	–	–

[a] In 1984 all fertilizers were applied in the spring.
[b] Urea(46% N)
MAP=Monoammonium phosphate(11% N and 23% P).
Potash=Potassium chloride(50% K).
PMS=Potassium magnesium sulfate(18% K, 11% Mg and 22% S).
TSP=Triple superphosphate(20% P).
AN=Ammonium nitrate(34% N).
[c] SPPI=Spring pre-plant incorporated.
Banded=5 cm beside and 5 cm below seed at planting.
FI=Fall incorporated.
SD=Side-dressed.

Changes in organic nitrogen with time were not significant, but fertilizer rate influenced nitrogen levels. Organic nitrogen was influenced by fertilizer rates after three and six years of production (Figure 3). During this period the return in nitrogen in the stover was 490 kg N per hectare for the high rate of fertilizer vs. 398 kg of nitrogen for the normal rate of fertilization, a difference of 92 kg N/ha.

There was, during the six years of the project, a gradual divergence of the high fertilizer treatment from the normal treatments as far as organic nitrogen was concerned. The high fertilizer treatments resulted in greater amounts of organic nitrogen present in the soil compared with the low fertilizer rate. Increases in organic nitrogen were not large but nevertheless may be important on a long-term basis.

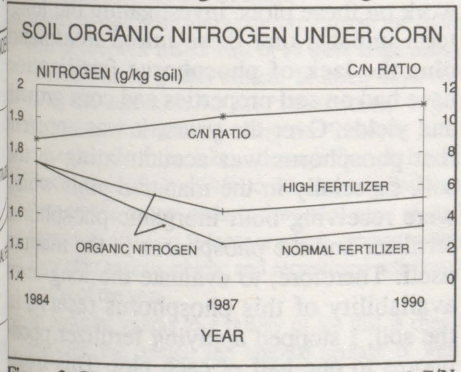

Figure 3. Changes in soil organic nitrogen and C/N ratio under grain corn production at two fertilizer levels.

There remains a question as to the quality of organic matter that results from enhanced corn production. In general the carbon to nitrogen ratios of the soil organic matter increased over the six years (Figure 3). Thus, the soil organic matter increase was of material somewhat less humified than the original organic material. The consequences of this possible difference in quality remain to be determined.

Results of the six years of corn production indicate that residue returns exceeded residue decomposition in these soils, and that fertilizer rates can affect carbon and organic nitrogen levels in the soil. Corn as a soil building crop? Certainly, high levels of corn production can result in improved soil quality, but this high production level requires optimum management and good returns of carbon and nitrogen to the soil. This most desirable result can best be managed through a program that maximizes corn yields and nutrient returns to the soil.

It is interesting to note that the average corn yields in Quebec are approximately 6 to 6.5 tons per hectare. Assuming a 50 per cent harvest index, this means that around 6 to 6.5 tons of stover are returned to the soil each year. Thus this is at the 6 ton breakeven point suggested by Larsen et al. (1972). Larsen et al. found that residue returns greater than 6 tons dry matter per hectare (about 3 tons carbon) in corn production increased soil organic carbon. Consequently one could assume that one half the soils under corn in Quebec are below average, below 6 tons residue return per hectare, and consequently soil organic matter is decreasing. On the other hand, one half the soils planted to corn have above average yields and residue returns and, therefore, soil organic matter may be increasing. What we have to do is to get the lower half of the producers above the 6 tons per hectare level of production. This can be done through sound management of good corn soils.

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Maximum yields varied from 15.2 tons per hectare of grain in 1985 to 9.4 tons per hectare in 1989.

Effects of Tillage, Fertilization, and Continuous Corn Production on Corn Yield and Soil Organic Matter Content

by Professor I.P. O'Halloran
Department of Renewable Resources

Soil organic matter, or soil humus, is very important in terms of the productivity of a soil. This material is mostly derived from the microbial decomposition of plant and animal residues added to the soil, and influences many of the chemical and physical properties of the soil which govern plant growth. Soil organic matter can be viewed as the glue which binds soil particles into larger units (called aggregates). This grouping of particles into aggregates is what gives the soil its structure and is extremely important with respect to the physical suitability of a soil to support plant growth.

The amount of organic matter in a soil will eventually reach a constant value for a given set of environmental conditions. This equilibrium level represents a balance between the production of soil organic matter through the decomposition of organic materials added to the soil (input), and the loss of soil organic matter also through microbial decomposition (output). Changes in either the inputs or outputs of organic matter will cause the soil organic matter levels to change. Cultivation of a soil usually decreases its organic matter content. Inputs into the soil are reduced as part of the crop is harvested. Outputs are increased as organic matter decomposition is enhanced by the tillage, fertilization, and liming practices typically employed in crop production systems.

As evident from other articles in this issue, corn is a significant field crop in Quebec and Ontario. Continuous production of row crops such as corn, using conventional tillage methods, often contributes to a deterioration in soil quality and increases the potential for soil erosion. Conventional tillage operations usually involve a fall mouldboard plowing, followed by one or two spring diskings. These tillage practices can contribute directly to the breakdown of soil aggregates and promote organic matter decomposition. In addition by incorporating any post-harvest crop residues remaining on the soil surface the fall tillage exposes the soil to fall and spring rains. The impact of raindrops, which act as tiny bombs when they strike the soil surface, contributes to the breakdown of soil aggregates into smaller fragments which are easier to transport by water and, therefore, increase the potential for soil erosion. Conversely, conservational tillage systems tend to conserve soil organic matter and increase the amount of crop residue remaining on the soil surface. This offers some protection for the soil against raindrop impact and may also reduce the amount and velocity of above-ground water flow. Thus, conservational or reduced tillage systems such as no-till (a practice in which the crop is planted directly into the stubble of the previous crop) can be very effective in reducing soil erosion. Reduced production costs may also be realized due to fewer operational passes over the field. In addition, work I conducted at the University of Guelph indicated that no-till systems may facilitate the uptake of several nutrients from the soil. In particular, phosphorus uptake appears to be dramatically improved when the soil is not physically disturbed by tillage operations. Physically disturbing the soil through tillage operations reduces the development and/or plant derived benefits from the symbiotic association formed between corn plants and mycorrhizal fungi commonly found in soils. Better utilization of this natural symbiotic association in soils could potentially reduce the fertilizer requirements of the crop.

Drawbacks to No-till

No-till systems, however, are not without their drawbacks. The lack of tillage operations tends to make the control of weeds somewhat more difficult. Application of farmyard manures to no-till soils is also of concern, as the fertilizer value of the manure for crop production may be reduced. This can primarily be attributed to the fact that the manure is left on the soil surface, thus enhancing the loss of nitrogen through ammonia volatilization. But what probably is the major limitation to the widespread use of no-till systems in continuous corn production is the fact that yields may be adversely affected. Reductions in grain yields of 10 to 20 per cent are not uncommon, with larger yield decreases associated with finer-textured (clay) soils. The reductions in yields have been attributed to several factors such as higher soil bulk densities and greater resistance to root penetration. The accumulation of plant residues on the soil surface may also hinder the proper planting and germination of seeds as well as lower soil temperatures.

In 1981 the Departments of Renewable Resources, Plant Science, and Agricultural Engineering initiated a study on the Macdonald farm to investigate the impact of tillage intensity and manuring on corn production and soil properties. Two soils, a sandy loam and clay, were selected and conventional, reduced, and no-till tillage systems employed. Fertilization consisted of either adding inorganic fertilizers or dairy manure plus inorganic phosphorus fertilizer. The general conclusions of this study was that during the first six years of treatments, no-till corn production could be an economically viable alternative, providing adequate yields could be maintained. In general manure applications gave lower yields than inorganic fertilizer applications, especially when used in a no-till system. However, manuring did result in higher soil organic matter levels.

Since 1988 I have been continuing the work on these plots, investigating the long-term impacts that these initial treatments plus the lack of phosphorus fertilization have had on soil properties and corn growth and yields. Over the years, it was apparent that phosphorus was accumulating in the soil, especially in the manured plots which were receiving both inorganic phosphorus fertilizer and the phosphorus in the manure itself. Therefore, to evaluate the long-term availability of this phosphorus reserve in the soil, I stopped applying fertilizer phosphorus to one-half of each plot. This treatment allows for the study of changes in soil phosphorus forms as available phosphorus

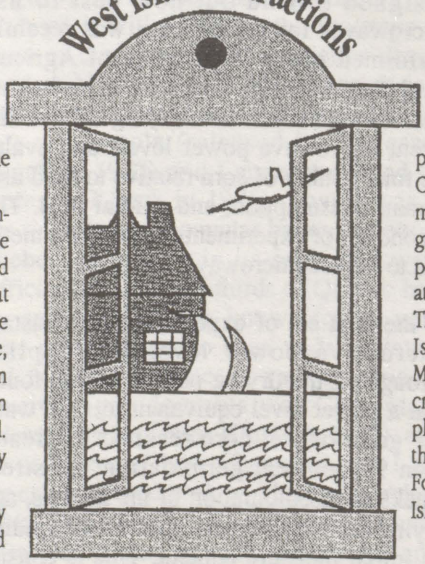
is depleted in the soil. It would also increase the importance of mycorrhizal associations for plant growth, and better illustrate the influence that tillage and manuring have on these associations.

Soil organic matter appears to have been increased or at least maintained in all treatments. This would suggest that soil organic matter loss and continuous corn production need not be synonymous. Application of manure resulted in higher organic matter levels compared to inorganic fertilization only in the sandy loam soil. Surprisingly, tillage systems had no effect on soil organic matter levels. It would appear that while no-till may conserve organic matter in systems where soil organic matter is being depleted, it does not significantly contribute, at least not over an eight-year period, to the accumulation of soil organic matter.

The influence of treatments on yields has varied over the years, undoubtedly due to differences in growing season conditions and soil properties. On the clay soil, in two of the last four years, yields have been lower in the no-till system compared to the other two tillage systems, and in the manured plots compared to the inorganic fertilized plots. The inconsistency of the tillage effects on the yield would indicate that yearly differences in growing season conditions may play a very important role in the feasibility of producing corn on fine-textured soil using no-till. On the other-hand, results have been more consistent on the sandy loam soil. From 1988 to 1991 there has been no influence of tillage on yield, while application of manures have given consistently lower yields than inorganic fertilizers. Thus, it would appear that no-till practices may be very effective on coarser-textured soils, although problems with the surface application of manures still exist. We are currently conducting research at Macdonald which is exploring methods of reducing ammonia volatilization from surface applied manures, which may reduce some of the problems with manure applications to no-till soils.

The addition of fertilizer phosphorus over the last four years has had more of an impact on corn grown on the sandy loam soil. In 1988, there was no growth response to phosphorus application, which was somewhat expected due to the relatively high soil phosphorus levels. In each of the subsequent years the increase in crop yields due to phosphorus applications has become larger. These responses to phosphorus fertilization have been only observed for the inorganic fertilizer treatments. Once again this is not surprising as the manured plots had received the most phosphorus since the initiation of the experiment in 1981. However, interesting trends in plant responses to phosphorus applications are developing as soil reserves are being depleted. Of note, is the fact that inorganic phosphorus application is becoming increasingly more important in the conventionally tilled-inorganic fertilizer system. Studies are continuing to evaluate the impact of the tillage, manuring, and fertilizer treatments on the development of mycorrhizal associations with corn plants and the seasonal availability of soil phosphorus.

West Island Attractions



In order to promote the rich tourist potential of the region to visitors from both within and outside the province, a group of people got together in 1989 to form the Tourism Office of the West Island.

Lovers of nature are encouraged to explore the natural wonders of the West Island. First of all there is the majestic Lake St-Louis with its golden sunsets. Its lovely bays, coves, and inlets are accessible via the "scenic route," beginning at Lachine and continuing along the "bord du lac" for the entire length of the lake – through Dorval, Pointe-Claire, Beaconsfield, Baie d'Urfé to Ste-Anne-de-Bellevue. Then there are the natural parks and wooded areas of the Morgan Arboretum and Cap St-Jacques which are not to be missed. They offer various athletic and recreational activities in every season of the year.

To acquaint visitors to a quality of life that is cherished by residents, the cultural and historial heritage of West Island towns and villages are also emphasized. As the West Island becomes increasingly well known outside of the province, enquiries have been received from as far away as Ontario, New Brunswick, and the United States. Visitors are making specific plans to spend some time here. The bilingual nature of the West Island and the fact that Dorval airport is only 20 minutes from downtown Montreal are added attractions for tourists.

The present membership of the Tourism Office of the West Island represents every facet of the tourism industry. Members include hotels, restaurants, bed and breakfasts, cruises, theatres, car rentals, shopping centres, sports complexes, etc. All are eager to promote West Island tourism for the economic good of the region.

For additional information call the Tourism Office of the West Island at (514) 695-1868 or write to:

Tourism Office of the West Island
1870 des Sources, Suite 201, Pointe-Claire, Que H9R 5N4

Can Seed Quality Corn be Dried in a Microwave Environment?

by Professor G.S.V. Raghavan and Dr. U.S. Shivhare
Department of Agricultural Engineering

The Canadian consumer is well aware of the variety of corn-based products available in the grocery store and that there is increasing interest in the use of corn in industry for fuel production. Although urban people are quite used to seeing large expanses of corn during summer vacations in the country, few understand the process of corn production and post-harvest handling of this commodity and even fewer are aware of the huge quantities of energy that are used to dry corn for safe storage and processing. In Canada the growing season is short and the climate variable. For this and related reasons, corn is usually harvested before it is dry enough to be stored or processed. The result is that millions of gallons of fuel are used each year to dry harvested corn in forced-air driers, and this at considerable time and expense. This is why scientists are studying new and more efficient ways to handle an old problem, that of grain conservation.

The most recent attempts to improve drying methods focus on the use of microwaves to drive the drying process. In order to understand why this technology is appealing it is important to know how forced-air or convection drying works. The heat carried by the air is transferred to the grain surface and slowly conducted to the inside. As the grain warms, the moisture is driven out, from the inside, and carried away. In more sophisticated driers, the warm air is recycled in order to reduce energy consumption. However, the transfer of heat from the air to the grain surface and then to the grain interior is slow and inefficient compared to the transfer rate possible using microwaves. One could achieve faster convection drying by using hotter air, but too much heat damages the grain and, in the worst case, one could end up with several hundred tons of popcorn!

In a microwave environment, the energy is radiated directly to the grain interior. The grain warms rapidly and uniformly, thus driving the moisture out more quickly. It suffices then to blow away the moisture-laden air as is done in a home microwave oven. Again, the problem is not to damage the grain by overheating. This is particularly important if the corn is to be used for seed, because the delicate genetic molecules may be easily damaged and the grain will not germinate. A series of experiments designed to find out how best to use microwaves for drying corn was recently performed in the Department of Agricultural Engineering. The first experiments were meant to determine drying rates at different microwave power levels and evaluate final quality of corn relative to seed use, human consumption, and animal feed. The second set of experiments focused on methods to reduce microwave energy use.

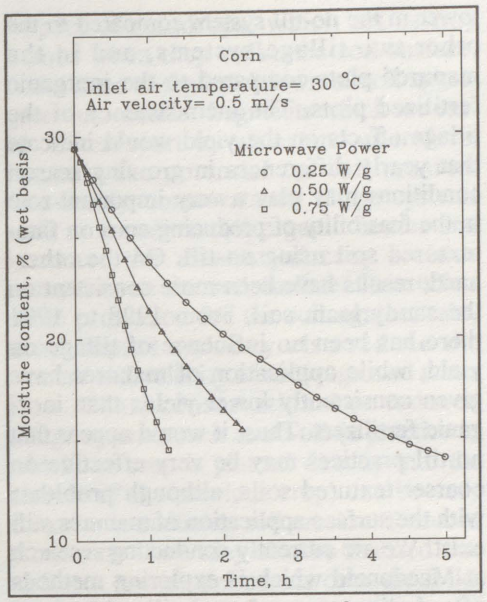


Figure 1. Microwave drying curves of corn.

In the first set of experiments, a constant microwave power level was applied throughout the drying period. It was found that a power level equivalent to 0.25 watts per gram of wet corn resulted in greater than 92 per cent germination, no stress cracks or discolouration of the kernels, and drying times of about five hours, depending on initial moisture content. This is considerably faster than times of about 15 hours for equivalent initial moisture content, using conventional driers. Even faster drying, with times as low as 1.5 hours were obtained using power levels of 0.50 and 0.75 watts per gram; however, germination was well below seed certification standards. Kernel quality after drying at these power levels was nevertheless still very suitable for food and animal feed purposes.

Typical microwave drying curves for a constant application of microwave energy are shown in Figure 1. Note that the drying can be reduced considerably using higher levels of microwave power. It was also found that the temperature of the incoming venting air did not affect the drying rate; however, better germination was observed for kernels dried at higher air velocities because of convective cooling of kernels.

Having established rough operating standards for obtaining seed quality dried corn, and having noted that the drying rate drops off under continuous operation, a second set of experiments was performed to study drying times and effects on quality under two different modes of operation: pulsed and variable power levels.
(turn to page 13).

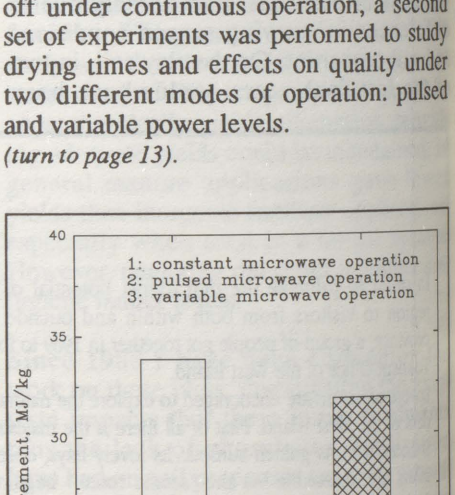


Figure 2. Energy requirement in drying of corn using microwaves.

Barley Breeding at Macdonald: A Continuing Success Story

by Professor Diane E. Mather
Department of Plant Science

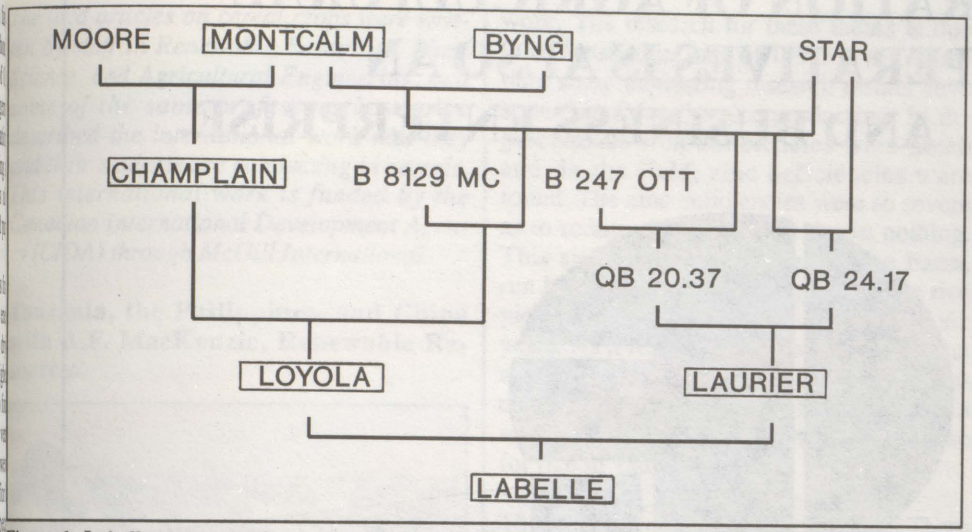


Figure 1. Labelle, a new barley variety from the successful breeding program at Macdonald. Boxed varieties were developed at Macdonald.

When I was a student at Mac, I helped put together a College Royal display on a new cereal variety that Professor H.R. Klinck had developed at Macdonald. My fellow students and I chose that subject because there was something about the genetic improvement of crops that captured our imaginations. By crossing two existing varieties and selecting among the offspring, a plant breeder may be able to develop a new variety that combines the strengths of both parents. This process can take quite a while: 10 or more years from making the cross to releasing the variety. As a student, that seemed like a very long time to me.

Eventually, my fascination with crop improvement won out over my impatience, and I decided to pursue a career in plant breeding. In 1988 Professor Klinck retired, and I found myself back at Macdonald, as the new cereal breeder. I quickly learned that plant breeders are just too busy to worry about the long-term nature of the work. Every year, there are new crosses to be made, and new selections to be made at every stage in the program. Every year, there are a few elite experimental strains in the final stages of testing. Some years (not every year, unfortunately!) one of these will be good enough to warrant release as a new variety. In 1991 a strain named QB.611.23 reached that point. In field trials in Quebec over several years it had consistently yielded more than commercially available check varieties. We registered it as Labelle barley, and seed is now being increased for distribution to farmers.

Only time will tell how widely Labelle will be grown by Quebec cereal producers, but we hope it will follow in the footsteps of some of the very popular varieties developed at Macdonald in past years. It is a direct descendant of some of these. Its parents are Loyola (released by Professor Klinck in 1972) and Laurier (released by Professor Klinck in 1975). Loyola was at one time the most popular barley variety in Quebec; seed sales in its peak year were sufficient to seed two-thirds of Quebec barley acreage. Laurier, known for its very large grains, has also been widely grown, and is still a registered variety. One of Laurier's grandparents was Champlain (released by Professor Klinck in 1962), and the pedigrees of both Champlain and Laurier can be traced back to Montcalm (released by Professor E.A. Lods in 1945). Montcalm was a particularly successful and well-known variety. All the other Macdonald barley varieties are feed barleys and were grown primarily in Quebec, but Montcalm met the malting quality standards of its day, and in the early 1950s it was the most widely grown malting barley in North America. Laurier also descends from Byng (relesed by Professor Lods in 1936), which was one of the first varieties released by the Macdonald barley breeding program.

The Macdonald barley breeding program has operated continuously since it was established by Professor L.S. Klinck in 1907. In the early years, every experimental strain was sown and harvested by hand and every detail was neatly recorded in notebooks with pen and ink. Today, we sow and harvest with modern research equipment, and we record information on computers. Nevertheless, we treasure and consult the old record books, and we are always conscious that we are continuing work that was begun over 80 years ago. In the past the success of varieties like Montcalm and Laurier have proven that the effort was worthwhile. We hope that Labelle and the varieties that follow it will do the same.

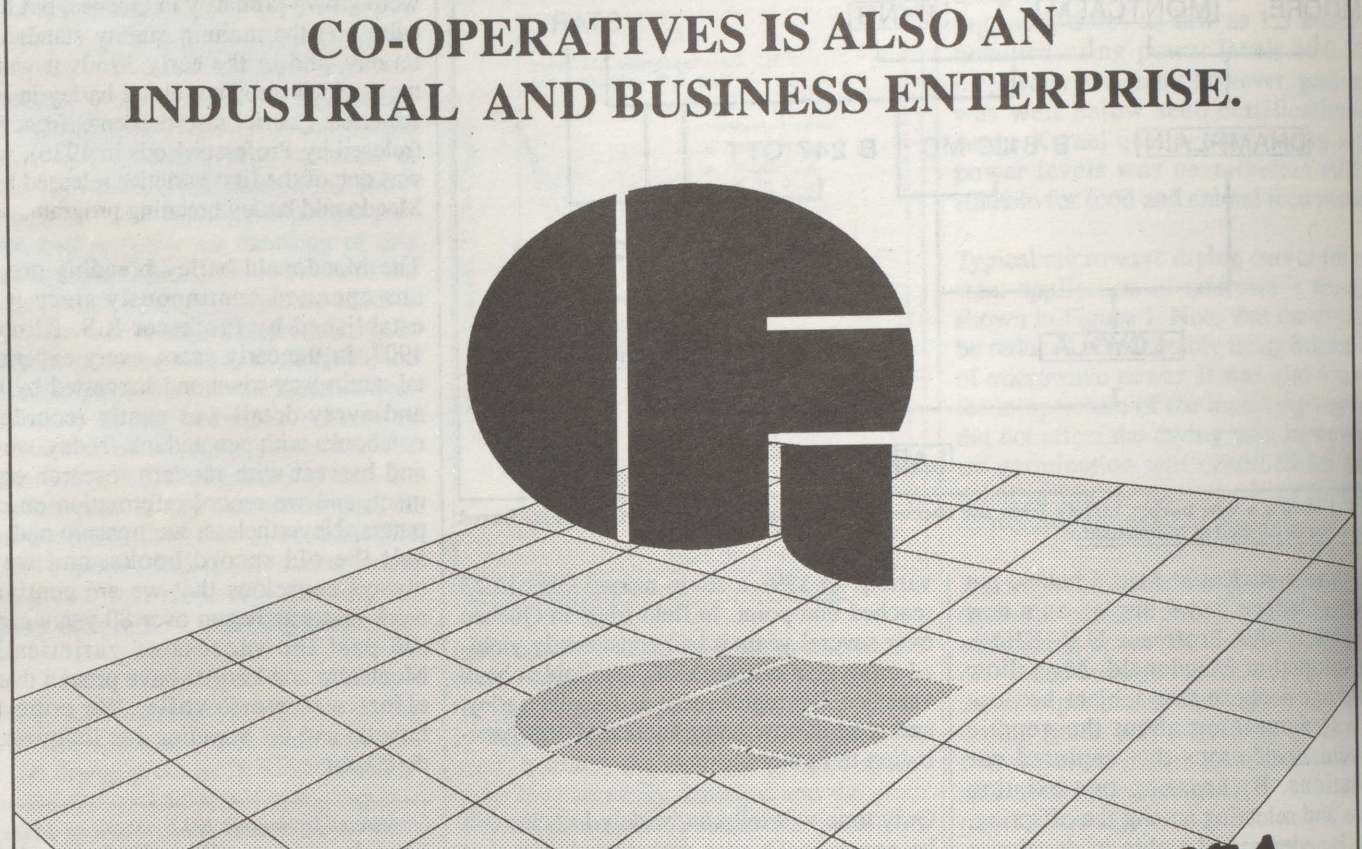
(continued from page 12).

The idea was to allow the heat build up inside the corn kernels to drive the drying process by applying microwave energy either intermittently or on a reducing power basis, thus reducing the overall energy losses (Figure 2). As expected, energy consumption was reduced and grain quality improved due to lower internal grain temperature. The trade-off was longer drying times, but these were still less than half times obtained in conventional driers.

This study has shown that microwaves can be successfully used to dry corn for seed purposes. Work is currently under way to apply the knowledge obtained to optimize the microwave drying process and develop a microwave drier for industrial use. It is hoped that the Department of Plant Science will carry out studies of the genetic quality of microwave-dried corn in order to back up the conclusions of this project.

COOPÉRATIVE FÉDÉRÉE DE QUÉBEC

THE FEDERATION OF AGRICULTURAL CO-OPERATIVES IS ALSO AN INDUSTRIAL AND BUSINESS ENTERPRISE.



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MAC INTERNATIONAL

The lead articles on cereal crops were written by staff in Renewable Resources, Plant Science, and Agricultural Engineering, and some of the same professors have also described the international work that they and their students are conducting in cereals. This international work is funded by the Canadian International Development Agency (CIDA) through McGill International.

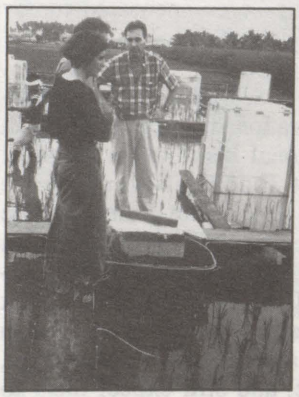
Tanzania, the Philippines, and China with A.F. MacKenzie, Renewable Resources

Professors Msanaya, Semoka, and Mnkeni of Sokoine University of Agriculture at a potential benchmark soil fertility site near Morogoro, Tanzania.

Corn and rice are major staples in Tanzania, so it is not surprising that they are the focus of the soil fertility research program run jointly by McGill University and Sokoine University of Agriculture in Morogoro, Tanzania. The project is evaluating the soil fertility status of benchmark soils of Tanzania and co-supervisors are A. F. MacKenzie of the Department of Renewable Resources at Macdonald Campus and P. N. S. Mnkeni of the Department of Soil Science of Sokoine University of Agriculture.

The project began in 1988 when arrangements for purchasing a tractor with implements, a truck, and some soil sampling and analysis equipment were made. This equipment duly arrived in Tanzania for use in the soil fertility plots. In the meantime three students, David Ussiri, Richard Ritte, and Shelukindo Bashiru, were sent to Macdonald College for two semesters of course work. The research for these theses is due to be finished in June of 1992. In the meantime some interesting research results have been found for the rice production. In the greenhouse iron deficiencies were noted and, in the field, zinc deficiencies were found. The zinc deficiencies were so severe as to reduce rice growth to almost nothing. This site was on the Dakawa Rice Farm, run by the District of Morogoro, where rice yields have been declining for the past six years. As a result of our work, it is felt that much of this decline is due to zinc deficiency. Hopefully the results will be used on a wider scale to evaluate zinc fertilizer use for rice in Tanzania.

The results for corn are less dramatic. There has been a lack of rainfall with subsequent failure of the grain crops. However, it's "next year" country in Tanzania, and we hope the crops for 1992 should be of better quality.



Caroline Begg observes field trials with two research staff at the International Rice Research Institute, Los Banos, The Philippines.

Caroline Begg, a PhD student in the Department of Renewable Resources, is carrying out a project on rice production at the International Rice Research Institute (IRRI) in the Philippines. Her study relates to phosphorus nutrition of rice and the ability of the rice plant to oxidize the soil around the root. If the soil is oxidized, the inherent phosphorus availability as well as iron solubility and acidity of the soil will be changed. Caroline has been working under very restrictive conditions of anerobic or zero oxygen tolerance growth. Using innovative techniques, she has been able to study the change in iron content phosphorus availability and pH within millimetres of the rice root. Eventually a model will be developed to indicate how rice plants influence the root environment and consequently phosphorus availability. Such information will be applicable to rice production in many areas of the world. In the meantime Caroline is completing her research for her PhD program and plans to continue her career in the area of soil management and crop production in tropical soils.

China is also known for extensive and intensive rice and corn production. Thus it is not surprising that China wishes to increase the training of soil fertility researchers. Mr. Xinghua Xie is a graduate student in the Department of Renewable Resources studying aspects of soil fertility with corn. He hails from Sichuan Province and is on leave from the Sichuan Academy of Agricultural Sciences in Chengdu. His program is administered by the Potash & Phosphate Institute of Canada from funds provided by CIDA. He has become totally familiar with our field and laboratory techniques, but his project has a distinctly Canadian flair – he is using a pulp mill waste product to try to increase fertilizer phosphorus and nitrogen efficiency. Perhaps he will be able to find a similar product in China when he returns.

India and the Philippines with Vijaya Raghavan, Agricultural Engineering

In 1990 the Institutional Co-operation and Development Services Division of CIDA approved a project "Bangalore (University of Agricultural Sciences)-Macdonald Post-Harvest Engineering," through McGill International. The major activities of the project are:

(a) Staff exchange between the University of Agricultural Sciences (UAS) and the Macdonald Campus leading to staff training and upgrading and development of Post-Harvest Engineering curricula at the MSc level;

(b) Strengthening of the post-harvest aspect of the undergraduate offerings at UAS and training of new staff at UAS in the area of Post-Harvest Engineering;

(c) To assist in the transfer of appropriate technology for rural communities;

(d) To develop processing techniques which could be used by rural communities to enhance shelf-life of indigenous produce, thus minimizing spoilage.

(e) To train women in simple post-harvest handling and preservation techniques – women who can ameliorate distribution and supply scheme of local produce at the market place.

With the Library as a backdrop, UAS staff studying at Macdonald are, l to r, Mr. B. Ranganna (PhD), Mr. S.B. Batagurki (MSc), Mr. D.G. Prabhanjan (MSc), and Mr. T.N. Tulasidas (PhD).

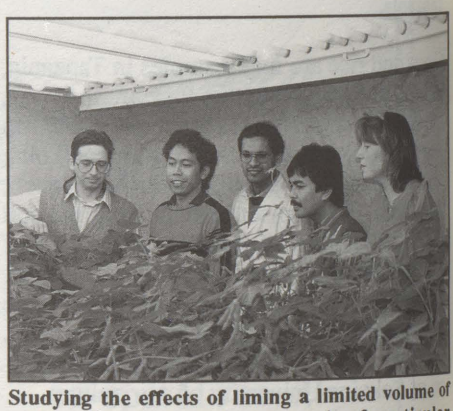
Professor Raghavan and guests in the Department of Agricultural Engineering last November, l to r, the Hon. Chikke Gowda, Minister of Agriculture and Pro-chancellor of the University of Agricultural Sciences, and Dr. Puranikmath, Director of Agriculture, Government of Karnataka.

Under the auspices of the "Food Systems Development Project" with the University of Philippines in the Visayas, Mr. Samson Sotocinal is doing his graduate work. He is currently working on his first draft of his Master's thesis.

Nigeria with Don Smith, Plant Science

Intercropping, the process of growing two or more crops on the same land at the same time, has long been the practice in third world countries. In Nigeria cowpea is the major food legume, and almost all the cowpea produced in Nigeria is intercropped with a cereal – much of it with corn. Some is intercropped with sorghum, pearl millet, or cassava. From the perspective of the local farmers, this system offers stability in that climatic conditions which are less favourable to one crop may be more favourable to the other and decreases in the yield of one may be compensated for by increases in the yield of the other.

Dr. Smith and Mr. S. Blade, a graduate student, in collaboration with Dr. B.B. Singh of the International Institute for Tropical Agriculture at Ibadan, Nigeria, have attempted to determine whether the increased species diversity associated with intercropping cowpea and corn also provides improved yields and to see if plant breeders may select for improved cowpea cultivars in the absence of corn plants, i.e., in monoculture, and still expect them to perform well in intercrops. This work showed that the presence of the cowpea actually improved the yield of the corn This seemed to be due to leakage of nitrogen from the roots of the cowpea into the soil and subsequent uptake by the corn. As a legume, cowpea has the capacity to take nitrogen from the air and convert it into forms useful for plant growth. Cereals, including corn, do not have this ability. Most tropical soils are very low in organic matter (often less than one per cent) and very low in soil nitrogen. Farmers in Nigeria, and in most of the third world, cannot afford fertilizers. Much of the cereal produced in third world countries is produced under conditions of nutrient limitation, and nitrogen is often the element most limited. This work offers some explanation for the long preference of intercropping in the tropics. Additional research may allow better understanding of the movement of nitrogen from legumes to cereals and an increase in the level of this process, allowing further increased benefits from intercropping crops such as cowpea and corn. This research also showed that it is possible to select for improved cowpea cultivars under monoculture conditions and expect them to perform well in intercrops.



Studying the effects of liming a limited volume of soil on the growth of soybean is of particular interest to Surawan (2nd from left), an Indonesian graduate student enrolled in the Department of Renewable Resources. Many of the low-income farmers in his native country are faced with the dilemma of producing soybeans, their major dietary source of protein, on acidic soils with minimal lime imputs. Photographed examining the growth of soybean in a growth-bench experiment are, l to r, Dr. Ivan O'Halloran, graduate students: Surawan (Indonesia), Zahangir Kabir (Bangladesh), Fadly Yusran (Indonesia) and laboratory assistant Wendy Jones.

Notable Events

NABEC Conference on Campus

Enjoying a break during the sessions, l to r, Bill Roberts, Past Director of ASAE, Art Johnson, Professor at the University of Maryland, Eric Norris, Chairman, host committee of 1991 NABEC, and Bob Graves, Professor at Penn State University.

The quiet summer campus became a beehive of activity for a few days last July when the NABEC (Northeast Ag/Bio Engineering Conference) of the American Society of Agricultural Engineers held its second annual conference here at Macdonald on July 21 to 24.

Topics vital to present day agriculture: pollution, environmental quality, animal welfare, trade and food production were main points of focus. The main theme of the conference "Food Systems on a Tightrope" was reviewed on a global perspective in three technical sessions and experts shared their experiences. In addition to the main sessions, there were also four concurrent technical presentation sessions. The first focussed on human agricultural activity in relation to earth's eco-being and its changes. Drs. Robert Kok and Timothy Johns kindled the minds of their audience with their lead papers. The role of an Agricultural Engineer was ascertained in the changing scenario, with Dale Lehman, chairman of NABEC, presiding. A second session deliberated on the impact of regulations, technology, and economics on agricultural inputs and also on Agricultural DRASTIC application for the Great Lakes Basin of Canada. Experts – Herbert Bouland, Doug Alley, Kelly Wood, and Bruce Krischner spoke with Clair Gartley, chairperson-elect, presiding. This session was followed by a lively discussion on the need of introducing additional biological science courses to the Agricultural Engineering curriculum; Dr. Art Johnson of Maryland University presented the lead paper for discussions.

Session I of the two parallel concurrent technical presentation sessions was presided over by Vijaya Raghavan, vice-chair of NABEC, and there were six presentations concerning ground water contamination, water quality, drainage, subsurface irrigation, and crop-water response. There were also six presentations in the concurrent presentation session II, which was presided over by Dr. Gene Giacomelli, secretary-elect of NABEC. This session covered presentations on environmental control and controlled atmosphere.

Valerie Orsat of the Macdonald Campus – first-prize winner of the Agricultural Engineering Student Paper Competition – receives certificate and cheque from her advisor Professor Vijaya Raghavan.

The conference had started with a wine and cheese, and a barbecue dinner at Tadja Hall, the Macdonald Faculty Club, with chefs Steve Olive and John Sheppard, capped the first full day.

Dr. James Love, Director of Animal Care, University of British Columbia, presented the new challenges for agricultural engineers with respect to animal welfare and care. This session was presided over by Lloyd Thomas, past chairman of NABEC. Concurrent technical presentations III and IV were presided over by Dr. Bob Graves and Dr. David Ross, treasurer of NABEC. Each of these sessions had six paper presentations covering different aspects of Ag/Bio engineering.

The participants toured the Department of Agricultural Engineering and learned about the various research activities. Computer program demonstrations were held concurrently. On the final afternoon president Martin Wrubleski of the Canadian Society of Agricultural Engineers spoke to the group. This was followed by student paper and design presentations. It was a proud moment for the faculty to witness the awarding of certificates and prizes to Valerie Orsat, Macdonald Campus of McGill University, the first- prize winner of the ASAE Agricultural Engineering student paper competition, Pierre-Yves Monnard, also of the Macdonald Campus, the first-prize winner of the student design paper competition, and Dale Seemans of Delaware University, the first-prize winner of agrmech paper competition of the ASAE.

Dr. Chandra Madramootoo was master of ceremonies at a banquet that evening. Dr. David Bird entertained the group with a most entertaining speech. The following day a soil and water tour was organized by Dr. Robert Broughton.

Hosts and visitors, l to r, David Ross, Treasurer of NABEC, Vijaya Raghavan, Macdonald and 2nd Vice Chairman, NABEC, Dale Lehman, Chairman, NABEC, Eric Norris, Chairman, organizing committee at Macdonald, Palani Krishnam, Chairman, career guidance committee, and D.G. Prabhanjan, graduate student, Macdonald.

Bird Conference a Big Success

Jean Beliveau, second from left, received thanks from David Bird, Mary Milburn, and Rodger Titman for his and "Les Canadiens'" contribution to the conference.

From August 14 through 17, 1991, over 650 ornithologists from Canada, the United States, and 10 other countries flocked to the downtown McGill campus to attend the 109th Stated Meeting of the American Ornithologists' Union (AOU). Over 200 students attended. The annual conference is generally among the largest of its kind in the western hemisphere. As you might imagine, it took a great deal of careful planning and plain hard work to make it the success it was. Co-chairmen David Bird and Rodger Titman of the Department of Renewable Resources at McGill's Macdonald Campus assembled a quality team of dedicated bird lovers to put on a great show. The conference was hosted by McGill University, the Province of Quebec Society for the Protection of Birds, Inc. (PQSPB), and the Society of Canadian Ornithologists. Over 350 scientific papers were presented at the conference. The plenary speaker was Dr. Jacob Sivak of the School of Optometry at the University of Waterloo, who spoke on "Avian Vision in Air and Water."

Naturally, David and Rodger could not help but let their enthusiasm for hockey go unchecked. They presented the AOU president, Dr. Burt Monroe, and the AOU program coordinator, Dr. Gary Schnell, with Montreal Canadiens' hockey sweaters. All those attending the banquet received official Canadiens' hockey pucks (the students from Louisiana were preplexed by the pucks, and it was hoped they were not mistaken for dessert dishes).

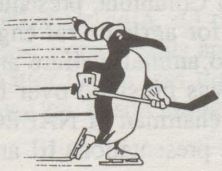
The icebreaker held at Club L'Esprit, a terrific Montreal nightclub, set the mood for a "fun" conference. Another class event was the official reception held at the Insectarium at the Botanical Gardens (hey, birds eat insects, don't they?).

Other special events included the Annual Ostrich Uproar, a five kilometer run around Mont Royal. A softball game between Canadian and American ornithologists tested whether baseball is truly an American pastime. Appropriately, the game was won by a two-run homer by Donald Kroodsma - apparently he played for the pros at one time, but that's o.k. - in the bottom of the last inning with two out. Yes, he played on the American side. Interestingly, next year's AOU meeting is in Ames, Iowa. Perhaps you've heard of the baseball film "Field of Dreams" shot in Iowa.

An excellent film festival was run concurrently with the paper sessions. One of the most pleasant surprises of the meeting was the success of a bird-calling contest with the finals "sung" at the banquet. This will surely become an annual event.

The pre-meeting and post-meeting field trips run by PQSPB organizers were enjoyed by all the participants and leaders.

All in all, letters of praise for the conference continued to come in long after the event. Everyone who helped in any small or large manner deserves a hefty pat on the back.



The conference emblem was an Aukey Player - Jacques Auk.

Duck Release

Despite a steady downpour of rain, the Ecomuseum's 2nd Annual Duck Release in October was a great success. Each spring the Ecomuseum receives orphaned ducklings from the SPCA and the public. These are raised and, for the most part, released in the fall. The public may participate in the release through a silent auction. To release a bird, participants make a silent bid, and this year the 70 highest bidders were on hand to release their birds.

David Bird, right, shows David Covo and his nephew Thomas the correct way to hold a duck.

Peggy Hamilton, l, and Sandi Gamble, prepare to release their Mallards.

This is comfortable, but I'd rather be flying!

Issues in Human Nutrition

Coming to Grips with Nutrition "Myth"-Information

by Sandy Phillips Hutchins, P.Dt.
Clinical Coordinator
Professional Practice (Stage) in Dietetics, Faculty Lecturer (Stage)

Every week many of us wind our way down the maze of aisles at the local supermarket to be faced with many perplexing decisions. Certainly having a shopping list helps, but if the list has "cereal" written on it, the number of choices available can be quite astounding! Which one will your spouse/significant other or children like? Which one will taste good? What about the price? Fibre content? Sugar? Nutritional factors play a significant part in consumers' selection according to recent surveys,and considering the plethora of nutrition information available to consumers, it is no surprise that distinguishing between fact and fiction is an on-going challenge.

With March 1992 Nutrition Month just around the corner, dietitians across Canada are gearing up to promote the national campaign " Challenge the Nutrition Myths." This Canadian Dietetic Association program will enable us all to have a little fun while coming to grips with some nutrition "myth"-information. Choosing healthy food does not have to take the pleasure out of eating, and this year's campaign focusses on the positive. Many of the myths being challenged this year are not "outlandish" nutrition fallacies, but are, instead, commonly believed inaccuracies or misconceptions. Here are some of them.

MYTHS *#1: Foods labelled "cholesterol-free" are always a healthier choice.*

This is probably one of the most aggravating advertising claims due to its misleading nature. Firstly, it implies that cholesterol has been removed from the food item, when, in fact, foods such as margarines and oils naturally contain no cholesterol because they are derived from plant sources. Secondly, it implies that this food will help in lowering blood cholesterol levels, which may or may not be true. Most consumers need to be more concerned with total fat content, particularly saturated fat content, as opposed to cholesterol content. As a reference for evaluating the total fat content of one serving of a food, consider that five grams of fat is the amount found in one portion (one teaspoon) of butter or margarine.

MYTHS *#2: It costs more to eat nutritiously.*

This misconception may have arisen from the sometimes high cost of foods such as fresh fruits, fresh vegetables, "good" cuts of meat, convenience foods (ex. low-cal frozen entrees), and other special diet items. It is important to note that if these items are desired, they can often be purchased on sale and, more importantly, a nutritious diet can always be obtained without necessarily buying the most expensive items in the store. In fact, eating nutritiously may easily cost less when we consider some of the expensive "treats" that we may be cutting down on!

MYTHS *#3: Breakfast cereals are just for kids.*

Actually, individuals who regularly have cereal for breakfast tend to have a higher daily intake of important nutrients such as iron and lower intakes of fat and cholesterol. Breakfast eaters in general have healthier eating habits than breakfast skippers.

If you are looking for cereals with high sources of fibre, look for cereals with four grams of fibre or more per serving. If you are concerned about sugar, to evaluate the sugar content of one serving of a cereal consider that four grams of sugar is equivalent to one teaspoon of table sugar and judge your cereal accordingly!

MYTHS *#4: Bread and pasta are fattening.*

Grain-based foods are naturally low in fat and are among the lowest calorie foods available. The challenge with these foods is controlling the portion sizes and the high fat spreads and sauces that accompany them. One tip is that pasta with tomato sauce is often lower in calories than pasta with either cream sauce or dripping in cheese! For extra good nutrition from the healthy breads and cereals food group, choose whole-grain products!

MYTHS *#5: You would be a lot healthier if you cut out red meat.*

The word is out! Red meats can be lean and nutritious too! Like everything else, moderate portion sizes and low fat cooking methods are the key for healthy eating.

Some of the Leanest Cuts of Meat

Meat cuts (cooked, lean only) with 8 grams fat or less, per 100 grams meat

inside round steak or roast	• pork leg steak or cutlet
eye of round	• ham
rump roast	• lamb leg
sirloin steak	• lamb loin chop
pork tenderloin	• all cuts of veal
roast leg of pork (butt or shank end)	

MYTHS *#6: Low fat foods may be healthier but they sure take the joy out of eating.*

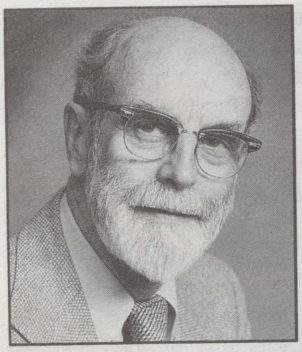
A zero fat diet would certainly not be very appetizing! Luckily for us, things are not that bleak! Most Canadians consume approximately 38 per cent of their diet in the form of fat and need only to make moderate changes in their diet to achieve the recommended 30 per cent. This still leaves room for fun and flavour. You may want to pick up the Canadian Dietetic Association's Guide to Healthy Eating "*Eat Well, Live Well*" by Helen Bishop MacDonald and Margaret Howard (1990), available at most bookstores, to get some exciting recipes.

This year's campaign "Challenge the Nutrition Myths" promises to be a fun one! Lots of activities are planned for March including a national toll free info-line (1-800-267-6887). Hope you are able to be involved in stamping out nutrition "myth"-information!

Reference
Canadian Dietetic Association. 1992. Challenge the Nutrition Myths. A resource manual for health professionals. Toronto, Canada.

Fun Fact Fable Fiction

by Dr. Ralph H. Estey
Emeritus Professor, Department of Plant Science



Buckwheat

Sixty years ago nearly every farm in eastern Canada grew some buckwheat. Pioneer farmers commonly sowed buckwheat between the tree stumps on newly cleared land because it prevented weed growth, improved the soil, and provided an excellent flour for making pancakes, porridge, and buckwheat cakes of the kind that Stephen Foster's Susanna held in her hand. Today, virtually all of the so–called health food stores sell buckwheat flour at premium prices. The young leaves of buckwheat were used for greens that are said to rival fiddleheads in tastiness, although I have my doubts about that. Buckwheat flowers are attractive to honey bees and buckwheat honey has a distinctively delicious flavour. Buckwheat is easily grown on most soils, and it is remarkably resistant to diseases, insect pests, and the vagaries of the weather. Many of the early growers claimed that the ripe seeds produced better flour after being exposed to one or two fall frosts, thus it has long been considered one of the most reliable of crops. The brown, three-cornered seeds of buckwheat look like miniature beech nuts, consequently the "buck" in buckwheat is an adaptation of a Swedish word for beech. Incidentally, buckwheat hulls provided an excellent insulating material in the walls of many a pioneer home.

Poll Tax

The controversy over poll taxes in England prompted me to investigate the sources of those words. I learned that Poll Tax came from Middle English when "Polle" meant "crown of the head," thus Poll Tax is an exact synonym for Head Tax.

Where is the Wood?

When you need to knock on wood you soon learn that the world is now made almost entirely of metal and plastics.

Why I Left the Farm

I left my dad his farm
his plow
Because my calf became
his cow.
I left my dad, 'twas wrong
of course
Because my colt became
his horse.
I left my dad to sow
and reap
Because my lamb became
his sheep.
I dropped my hoe and stuck
my fork
Because my pig became
his pork.

Curious English

Foreigners trying to learn English must have great difficulty with the many commonly used phrases that mean the exact opposite to what the words are intended to mean. Examples include such phrases as: "A near miss," which really means a strike or collision, and "A strike" in a ball game really means a miss. In history, reference is often made to "The first century B.C.," when what the author really means is the last century B.C., because nobody knows how many million years ago the first century began or ended. They must also wonder how a house can simultaneously "burn up" while they are watching it "burn down."

Missing Book

The Book of Enoch has been kept out of the Bible for several hundred years. In that book the prophet Enoch, the father of Methuselah, who is reputed to have lived 969 years (Genesis 5:27), told of his travels to distant worlds and distant firmaments. He recalled many parables told to him by the gods, and he gave some surprisingly accurate details of the orbits of the sun and moon and the general functioning of the heavens. After his services on earth, Enoch ascended into the heavens in a fire-emitting chariot, according to the Book of Enoch. The Bible refers to Enoch and says he lived 365 years and then disappeared or, in biblical terms: "he walked with God: and he was not; for God took him." (Genesis 5:23-23). For more than 200 years the Book of Enoch was accepted as having been written by a recognized prophet. However, toward the close of the third and the beginning of the fourth centuries A.D., it began to be discredited. It was eventually banned by church authorities, thus providing one of the early examples of church censorship.

Wooden Paper

Paper was made from wood pulp, for the first time, by Charles Fenerty of Upper Sackville, New Brunswick, in 1841.

Recycled Paper

The recycling of paper is not a recent phenomenon. Waste paper has been a source of paper-making material for more than 100 years, and methods for the removal of ink from paper are well known to all paper makers. The first process for removing ink from waste paper was patented, in England, in 1800, and de-inking systems have been used in the United States since 1849. In 1949 the Waste Paper Institute, a division of the United States National Association of Waste Material Dealers, Inc., adopted standards for 24 grades of waste paper.

First English Printer

William Caxton's eyes were glinting
The glorious day he started printing.
The prospect might have pleased him less,
If he'd foreseen the Tabloid Press.

Gordon Snell

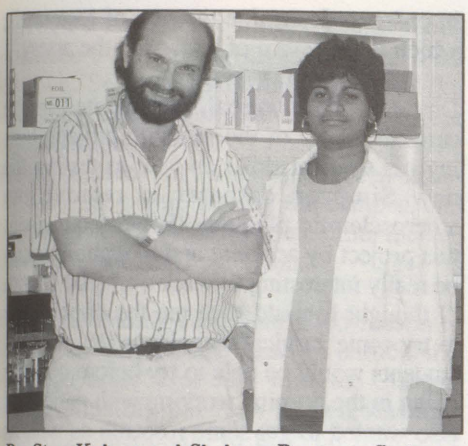
Bloopers

Acid rain affects the spooning process of fish.
Lord Tennyson was abscessed by death.

Seeking Solutions

Medical Students at Macdonald

by Amy Ing



Dr. Stan Kubow and Shabana Parvez, a first-year medical student.

Thirty-two kilometres may separate the two campuses of McGill but there are many instances of successful collaboration between the two. The McGill Nutrition and Food Science Centre and McGill International are two prime examples. Last summer, two medical students from McGill downtown got the opportunity to practice their skills by joining forces with two professors from Macdonald to explore diabetes and atherosclerosis.

Dr. Stan Kubow, Assistant Professor in the School of Dietetics and Human Nutrition, took on Shabana Parvez, a first-year medical student, to work on his research project titled: Role of Glycation Products and Free Radicals in Diabetes Teratogenesis. The year-old study is investigating the role of acetylsalicylic acid (ASA or Aspirin as it is better known) in preventing birth defects caused by diabetes in mothers.

"In diabetes, excess glucose in the bloodstream can bind to protein, producing glycation products," said Dr. Kubow. "These glycation products can form free radicals, highly reactive compounds that attack cell membranes which can prevent the fetus from developing normally. We are trying to determine whether the glycation products are the cause for malformations in babies of diabetic mothers and how Aspirin can prevent these products from forming."

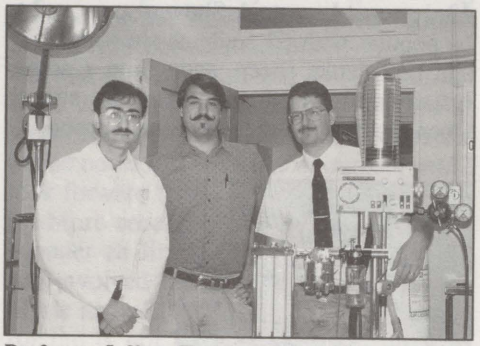
Dr. Kubow thinks there may be two possible theories as to how Aspirin can do this. The first theory is that Aspirin binds to the protein which changes its form and protects it from binding to the excess glucose, preventing formation of glycation products. The second theory is that a break-down product of Aspirin, salicylate, is a free radical scavenger which means it can pick up and dispose of any free radicals before it gets a chance to attack any tissues.

Shabana, originally from New York, enjoyed her eight-week experience on the Macdonald Campus. "It was different from downtown, much quieter and a lot more green space," she said. When asked how she learned about Dr. Kubow, she replied, "We were given a list of professors and their various areas of research. The aspect of teratology (study of birth defects) in Dr. Kubow's work appealed to me so I applied for a summer bursary to work in his lab." Shabana was able to perfect her laboratory techniques and enjoyed helping to design the study as well. "As this study is relatively new, we are still trying to determine the best methods, the concentration of Aspirin needed as well as the possibility of other drugs. It was very time consuming because determining something like the required dosage was trial and error. I enjoyed being part of the decision making."

The *in vitro* study involves the use of mice embryos cultured in petri dishes given one of four treatments, one of which is a high amount of glucose combined with a low dose of Aspirin in solution. After treatments, the embryos are examined in order to determine the degree of abnormality of the organs and limbs as well as amount of growth. The amount of protein and DNA material in the embryos are then assessed. Dr. Yaylayan, from the Department of Food Science and Agricultural Chemistry, is a collaborator in the study, performing the assays on the glycation products to determine the amount of protein bound to glucose.

Dr. Kubow hopes to see this research project continuing for at least five years as results are proving to be encouraging. This was the first time he has worked with a medical student and would like to work with others if possible. Shabana herself may return if she can obtain another bursary.

Using Goats as Models



Professor Jeffrey Turner, right, visits the Royal Victoria Hospital in Montreal for a meeting with Surgical Resident Dr. Aracat and first-year medical student David Gendron.

In another corner of the campus, Dr. Jeffrey Turner, Assistant Professor in the Department of Animal Science, took on David Gendron, also a first-year medical student, to work in his lab. Dr. Turner's research project is being undertaken in association with the Royal Victoria Hospital and is being funded by Sterling Winthrop. The project is exploring the use of goats as models for humans in the treatment of atherosclerosis. In atherosclerosis plaques build up in the vasculature, notably in the carotid artery, the artery leading to the brain. If plaques build up to the point where the artery is completely blocked, a stroke occurs. Current medical treatment has not been completely effective as loosening the plaque tends to allow particles to move into the brain which can in turn cause blindness, paralysis, or even death.

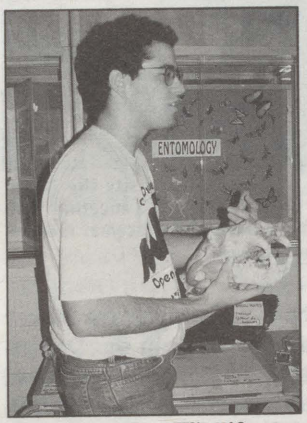
"We thought goats would be good models for two reasons," said Dr. Turner. "One, the size of the carotid artery is large enough to

(Turn to page 22)

Campus Life

Open House, October 1991

Between 4,000 to 5,000 school children, parents, and members of the community took advantage of wonderful fall weather to visit Macdonald: the lecture rooms, the labs, the Lyman Museum, the Ecomuseum, the Farm, and the Morgan Arboretum. Visitors enjoyed guided tours on foot, in mini busses, or by hay wagon. During Open House the Intercollegiate Judging Competition attracted 11 teams, and the 43rd annual Livestock Show also proved to be popular with 62 students showing dairy and beef cattle, sheep, and swine. Congratulations to all participants for a superb Open House. You did Macdonald proud!



Patrick Asch, a Wildlife student in the Department of Renewable Resources, uses a polar bear skull to explain how the bear does what it does to the seals that it eats.

Delightful aromas drew visitors to the School of Dietetics and Human Nutrition's F.N. Southam Food Laboratory where Dietetics students Anique Thibault and Johanne Vezina discussed their studies and offered samples of a delicious – and nutritious – stir fry.

(Continued from page 21)

work with and the diameter is similar to that of humans. Two, goats have a structure called the rete mirabelis which is located near the base of the skull. This structure can trap any particles that might be loosened from the atherosclerotic plaques during surgery before they reach the brain. This allows researchers to perfect the surgical procedure as well as demonstrate the efficacy of a new surgical instrument, the Simpson catheter, without causing the research animals to stroke. The goats are housed in the Large Animal Research Unit where they are fed a high cholesterol diet consisting mainly of powdered milk and egg yolk, for a period of about four months before surgery and continuously after that. The Unit's operating rooms are used for the surgery after which the goats are observed in order to determine the rate of restenosis, which is the return of lesions in the artery."

Sylvie Mahannah, Dip III, was the Grand Champion Showman at the Livestock Show. Sylvie also won the dairy, sheep, and swine finals.

Enjoying a reception during Open House, l to r, Stephen LeBlanc, President of the Students' Society, Russell Williams, MNA for Nelligan, Hélène Brunette, Coordinator, Open House, Julie Roy, Assistant Coordinator, Jean-Marc Paquet, President, l'Ordre des agronomes du Québec, and Dr. Roger Buckland, Vice-Principal, Macdonald Campus.

David, from Montreal, participated in the surgical aspect of the research project, testing his surgical skills as well as testing the new Simpson catheter to remove the atherosclerotic plaques. "I found out about this project by accident and thought it would be really interesting to work on," said David. "I thought it could give me the opportunity to try some surgical techniques few medical students would be able to try before actually being in the hospital working with patients. I also wanted to get some research as well as practical experience during the summer."

It was David's first time on the Macdonald campus and his first time working with a farm animal. He found the campus beautiful and the experience of working with a live animal to be less intimidating than he thought it would be. "It's a lot different from working with cadavers or frogs. Here, you have a large animal which bleeds and whose muscles move," he said. "But the serious aspect of the research - looking into atherosclerosis, one of the major causes of death today, counteracted my feelings about working with goats. They are good animals to work with; they are friendly and docile. This experience has also demystified surgery for later on when I'll be working on human beings."

Both Dr. Turner and David are enthusiastic about the project and see it continuing for quite a few years. This is not the first time Dr. Turner has worked with medical students; two other residents also worked on the project before David and other students are expected to participate. David would also like to return. "The applications of this research will be beneficial to both patients and doctors," said Dr. Turner. "Within time, we just might be able to prevent deaths from atherosclerosis."

Collaboration between the Macdonald and downtown campuses has always strengthened McGill's role in innovative research and will continue to do so for a long time.

Working with the Cream of the Crop

by Hazel M. Clarke

"When I first came here I found Convocation a particularly difficult time," Jean Brown, Secretary/Administrator for the Students' Society, explained shortly before Convocation last year. "I realized that some of the students with whom I had been closely associated were leaving the campus, and I might not see them for some time; indeed, some I might never see again."

Many, including Jean, had good reason to find Convocation last June "a particularly difficult time." Not only were the Class of '91 graduating but Jean Brown was also leaving Macdonald to take up residence with her husband in Prince Edward Island. Among the fond farewells for Jean was a surprise party at Harrison House, and a large number of graduates, students, and staff gathered to say "thank you, Jean for all you have done; we'll miss you but wish you well."

Originally from Bristol, England, Jean and her husband, Peter, came to Canada in 1955 and decided to settle in Quebec. After a few years, Peter joined Air Canada and the couple moved to Beaconsfield, a few miles from the Macdonald Campus. Her first connection with Macdonald was while her family, a son, Phillip, and daughter, Caroline, were growing up. Dr. Wally Sackston of Plant Pathology and the late Dr. Callen needed extra typing done and this was exactly the kind of work that she could do at home. In 1967 with her youngest starting school, Jean next sought part-time work and this time it was with Professor Dorothy Nichol of the Women's Athletics Department. When the Faculty of Education moved to the downtown campus, Jean preferred to stay at Macdonald, and her next position was full time – as secretary for the Students' Society.

"I was hired in 1973. Andy Therauds was President at the time and Jean Vauthier was the dedicated Secretary-Treasurer."

In the 18 years that Jean was on campus there was constant change of people and places. Jean explained that the 1970s were

At the surprise party for Jean Brown, Stephen LeBlanc presented her with a Bateman print and a photograph to be hung in Harrison House.

probably more hectic in some ways. The Students' Society shared the Centennial Centre with John Abbott students, the Students' Society maintaining and operating the CC, including a Snack Bar, the Bar Disco, rentals of the building, Robbers' Roost, etc., with a large full-time and part-time staff. Jean Vauthier managed the CC from its opening in 1967 until she retired in 1982, after which other people filled the gap until 1985 when Joan Kavalersky joined Jean in the office as Bookkeeper. In the years that they have worked together for the students, Jean has found Joan to be exactly the right kind of person for the job.

"Working with the Students' Society requires many skills, not the least of which are part-time handyman, building manager, caterer, electrician, plumber, bat-remover, and so on. Right from the start Joan fitted in perfectly," Jean said

With Joan joining the team, Jean's responsibility changed from straight secretarial work to include responsibility for all the council work.

"I have worked closely with many different presidents and councils," Jean recalled. "One is afraid to mention anyone in particular, but certainly some presidents do stand out. Jack Sadler was the President during a time of many changes. He was a busy man during that period; as a matter of fact, he served two consecutive terms as President. Jack was keen and still is an enthusiastic promoter of Macdonald. Neil Stapensea was a keen worker who initiated and named the "Mac Mouthpiece" and also drove me slightly crazy every day insisting on having a "Joke of the Day" in the Mac Mouthpiece. Another dedicated President who was fun to work with was Kevin Boushel. Marc Vezina was President also at a time of great change and a certain amount of stress, but he never lost his sense of humour, and I look forward to seeing him when he drops in. More recently, Jim Murphy (a fellow Islander eh Jim) was terrific, getting himself involved in campus life from day one of his arrival. One of the disappointments for me is not having the opportunity to work with Stephen LeBlanc. I know he will be great – he has already demonstrated that. He's got everything going for him, and I look forward to following his career."

Another change for Jean was the move for the Students' Society from the Centennial Centre to Harrison House. Jean has enjoyed Harrison House and is pleased to see that students are using it more. She expressed concern for the growing lack of participation of students in extracurricular activities. "Macdonald is small and we have always felt that we have something special going here and that all students will participate," Jean said. On the positive side, Jean feels that the students who do get involved are the "cream of the crop."

With Jean's husband Peter accepting a position in Summerside, P.E.I., Jean said that she will miss the students but hopes to have mini reunions there. When we get settled into our new home in Wilmot, I hope to get in touch with former Mac people on the Island, such as Andrew Kielly, Ronald, Patrick and Walter Quilty, and any others that remember me."

(Turn to page 33)

Reunion '91

50th Reunion for Teachers '41

by Norma McClenaghan Fisher
Teachers '41

Teachers '41 gather for a group photo on their Golden Anniversary.

They came from Gander, Newfoundland, Victoria and Vancouver, California, Arizona, Ohio, Ontario and, of course, Quebec. The occasion was the 50th Reunion of Teachers '41 held last September at Macdonald.

Forty-nine classmates went through a recognition session and then the reminiscing commenced. This continued throughout the day.

Registration in the Centennial Centre was followed by a coffee hour in the Macdonald-Stewart Lounge. Dean Roger Buckland extended a warm welcome and presented each with an attractively designed 50-year pin. We were also presented with the Honour Shield for having the highest percentage of the class at the Reunion weekend. Mr. Eric Thompson, Director of the Morgan Arboretum, gave an interesting illustrated talk on the history and development of the arboretum. On behalf of the class I was asked to present a cheque to Mr. Thompson for the commemorative English oak tree to be planted in the Morgan Arboretum.

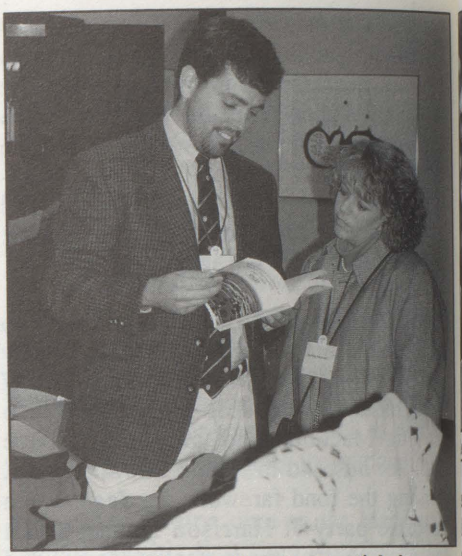
The Golden Anniversary Luncheon was held at the Faculty Club. Doug McVie, of Mississauga, acted as chairman. Following the luncheon we all moved back in time with unbelievable ease to recollect and recount highlights of life at Mac. It was fun looking at the class picture of 1941. Norma, Doug and Malcolm led this session. McGill Principal David Johnston came to extend congratulations for the years of achievement. A class picture was taken outside the Faculty Club. At this point cars departed for the commemorative tree planting ceremony at the arboretum. The concluding activity, where farewells took place, was at Dean Buckland's reception, which was followed by a barbecue and dance.

Principal Johnston, standing, greets Phyllis (Laishley) MacDougall, BSc(HEc)'46, Dr. Daniel MacDougall, Macdonald Branch Treasurer Stanley, BSc(Agr)'60, and Muriel Reid, and Professor Robert Broughton of Agricultural Engineering.

Some of the Teachers '41 with Eric Thompson, Director of the Arboretum, gather for the tree planting ceremony.

An expression of thanks and appreciation was extended to the organizing committee: Elsie Brownrigg McTurk, Dorothy Clark Sokolyk, and Norma McClenaghan Fisher.

Throughout the preparation for the Reunion, the organizing committee were support ed and assisted by the efficient staff of the McGill Graduate Society. Prior to and on the day of Reunion, the faculty and staff at the Macdonald Campus extended full cooperation and warm hospitality.

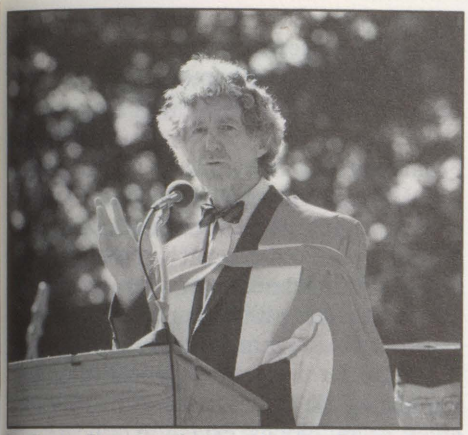


The Robbers' Roost attracts potential shoppers Stuart Hackwell, BSc(Agr)'86, and his wife Huntley.

Alton McEwen, BSc(Agr)'66, Marcel Couture, Associate Dean, Community Relations, Principal Johnston, and David Sangster, BSc(Agr)'66.

Focus Environment

Challenge to the Graduates



Dr. Lester Brown at Convocation last June.

Excerpts from Honorary Degree Recipient, Dr. Lester Brown's Convocation Address, June 7, 1991. Dr. Brown is the founder and President of the Worldwatch Institute in Washington, D.C.

In his Convocation address Dr. Brown told the graduates that they are entering a world that is both interesting and challenging. You will be "challenged with problems and developments in many fields that no other generation has had to face."

He said that each year we see that the earth's tree coverage is shrinking, the desserts are expanding, and the top soil and perhaps a third of our crop land is eroding. The concentration of greenhouse gases in the atmosphere is rising. The number of plant and animal species with which we share the planet has dimished by thousands just during the three years that you have been on this campus. Damage from acid rain is on every continent. Air pollution is reaching health threatening levels in hundreds of cities around the world. "If," he said, "you think that you are not going to be challenged by the time I have finished, I think that your mind will be changed."

Dr. Brown pointed out that in Mexico City there are entrepreneurs installing coin operated oxygen machines. When the air gets really bad, if you have coins, you can put them in these machines and get a few whiffs of oxygen just to pick you up again. The US State Department in Washington recommends that female employees assigned to Mexico City, or the wives of employees, not get pregnant while they are there.

Dr. Brown said, "I have talked about some of the health effects of the degradation of the planet. It is something that we have to turn around. It is going to take quite literally a restructuring of the global economy, a revolution in reproductive behaviour to put the breaks on population growth. You have to be a part of that; it is your world. That is what graduation is all about. You are going to have to work on it."

He discussed the degradation of the planet as it affects agriculture. It is estimated that the world's farmers are losing something like 24 billion tons of top soil from their crop land each year. And they are trying to feed 90 million more people. A study has shown that air pollution has reduced the harvest of all crops by at least five per cent, perhaps as much as 10 per cent. At the University of Maryland College of Agriculture, Professor Alan Terramura has been doing research on the effects of increased ultraviolet radiation on the yields of crops. His conclusion, using soybeans, one of the most sensitive crops, is that each one per cent increase in the amount of ultraviolet radiation reduces soybean yields by one per cent. No one is attempting to monitor the effects of stratospheric ozone depletion and the resulting increase in ultraviolet radiation on reducing crop yields. It has to be having an effect and could quite literally, if it continues, affect the direction of the evolution of life on the earth.

"We are faced with what I believe is a very difficult thing in the food-population balance. Latest population projections show world population going from 5.3 billion at present to some 12.4 billion before eventually stabilizing," Dr. Brown said. "Most of that growth (not much is coming in North America or in Europe, East Asia, China or Japan) is coming in the Indian sub-continent, in Africa, and in parts of Latin America.

"We have forgotten in our modern industrialized world how dependent we are on agriculture," he said. "I think it was Tim Wiseco, the environmental anthropologist at Harvard who said 'there is no such thing as a post agricultural society.' He is quite right. We are dependent on agriculture.

"There are a lot of things that we have to do in agriculture," he pointed out. "We have to do a better job of nutrient recycling. We have to do a much better job of integrated pest management, much more sophisticated than simply pouring pesticides on a crop every eight days or whatever is recommended. Most of the influential trends affecting agriculture will come from outside agriculture. Climate change will be the result of energy policy, not agricultural policy. Achieving a satisfactory balance between food and people is going to depend more on family planners than on farmers. There are limits as to what farmers can do in this finite planet."

He concluded his remarks by pointing out some encouraging signs. "More and more people are concerned about the future of the world that we will be leaving our children and our grandchildren." He said that as in times of war we need rapid mobilization. "During World War II we were mobilizing for a single purpose. That is the type of mobilization that is going to have to take place if we are going to get the world onto an environmentally sustainable economic path. The one that we are on now is clearly not sustainable, and agriculture is going to be an extremely important part of that."

With degrees in agriculture and food science, he said "you are going to be where the action is. If action is what you want, you couldn't have chosen much better. Increasingly, the future will be in your hands."

Diploma Corner

Three Days to Remember, Part I

by Serge Lussier
Assistant Director
Diploma in Agriculture Program

Some staff and students have great difficulty showing enthusiasm at 4:30 in the morning.

On September 23, 1991, the third year Diploma students were roused from their sleep very early to undertake a three day trip to the warm climes (?) of western Ontario. During these travels, their curiosity was tickled by organically-managed cows, a mechanical grape harvester, and other sundry novelties. As can be seen in the accompanying photograph, the students (and staff) do not look particularly awake at 4 a.m. The trip to Toronto was, therefore, quiet, except for the snoring. After being jump started by a coffee around 10 o'clock, we met Ellie Cavanagh, BSc(Agr)'65, near Newmarket. He was our guide for the first two visits. Ellie is the agricultural representative for the York region north of Toronto. He has steered us around this constantly changing area for many years.

Once again, Ellie had chosen two excellent farms, one a vegetable operation on muck soil and the second a sod production unit. Both farms were very well managed and the owners were forthcoming and clear in their explanations and answers.

The first farm, that of Jim Verkaik, produces carrots, celery, and onions. All the packing is done on the premises, using some sophisticated electronic equipment that reduces the overweight that is expected when dealing with large items like carrots and onions. Mr. Verkaik also talked about the labour problems that are associated with an operation that requires a great deal of manual work.

Since Toronto looms relatively close to the Holland Marsh, where the farm is situated, Mr. Verkaik faces stiff competition when hiring, and he has to bring in labourers from other countries. Notwithstanding the labour shortage, this farm is clean and well managed. A section can be irrigated easily since the farm is bisected by a river that is actually below the level of Lake Simcoe. Pumps are used to empty the drainage system of the Holland Marsh, and water can be led back in by gravity if it is needed for irrigation.

Crowd scenes were common, as everyone was interested in the visits. This picture was taken at the Hack farm in Kincardine.

After a quick lunch at a restaurant that bears a name similar to this Journal, we met Mr. Claus Zander, co-owner of Zander Sod Farms. I have never seen such a nice looking lawn! This table-top flat area, at least 10 hectares, did not show a single weed or even a blade of grass taller than the rest. The best golf course managers would have turned green (no pun intended) with envy at the sight. This beautiful grass was being lifted, cut, and rolled by specialized harvesters. An operator at the rear had the back-breaking job of loading the rolls on a pallet, at the rate of one every few seconds. The pallets were then placed on the company's own trucks and delivered to landscaping sites throughout the Toronto area.

What made this visit even more enjoyable was Mr. Zander's willingness to answer the numerous questions that sprang from the minds of teachers and students alike. He did so with openness, knowledge, and just the right amount of humour to keep everyone interested.

Following our farewells to Claus Zander and Ellie Cavanagh, we headed west to keep an appointment with the Cosack family. Carl and Suzie Cosack run a cow-calf and finishing beef operation on a large chunk of rolling hills near Shelburne. Two aspects of the enterprise make it a standout. First, the farm is run organically, without the use of the customary fertilizers, pesticides, or antibiotics, except in critical situations. Second, this farm is part of a cooperative association of about 20 farms that work together to provide the customer with high-quality, consistent beef cuts. They even market their beef under two trademarks: "Clean and Lean" and "Peace Valley" (Vallée bleue en français).

Being ever mindful of the well-being of their cattle, the Cosacks will not let an animal suffer if it is sick. They will administer antibiotics, but this animal is sold in the regular market, not under their trademarks.

Despite the blustery weather, we all took a walk through one of the pastures where most of the beef cows were grazing. When we reached the middle of the pasture, the unexpected happened. All the cows and calves (over 100 animals) strolled up to meet us. It was quite a sight; one line of human beings and less than 10 metres away, a long line of beef cattle intently staring at us.

After a visit to the barns and a long question and answer session, we were able to taste "Clean and Lean" beef at a barbecue. This was made even more enjoyable by the presence of the Cosack's two children, one a very young baby. We left the farm at dark for the trip to Kincardine and a well-deserved rest. I will be forever grateful to the students for letting me sleep quietly that night.

The next day arrived sunny and mild but that was not to last, as rain and wind

Service in the Gulf

returned in the afternoon. The day's schedule only included two farms, but that was done on purpose; we needed time to properly visit the farms, and we had a long trip to Welland awaiting us late in the day.

Both of the day's visits were to organically managed enterprises. The first is run by the Hack family in Kincardine. One of the Diploma students, Alex Brand, did his 1991 summer Farm Practice stage on this farm; we, therefore, had a good guide on hand.

The farm comprises about 200 ha of cash crop and hay land, and a beef operation. As the Hacks point out, the animals are necessary to provide the manure that is then transformed into compost for the fields. This farm grows a variety of cereal crops, including spelt and millet. The Hacks are also trying winter canola, a crop that offers numerous advantages in a rotation with cereals.

Very little of the land is left open during the winter. This practice and the extensive use of windbreaks prevent the wind erosion problems that plague many cash crop farms. At the time of our visit, one could see a good catch of oilseed radish growing in a field where cereals had been harvested during the summer. Despite the absence of the ubiquitous herbicides, the Hacks report few problems with weeds; this is the mark of a good cropping program.

The Hacks also report that marketing organically grown crops is not as easy as it used to be. More farmers are entering the ranks and the Hacks strive towards self-sufficiency. High quality and good contacts are absolute necessities.

(We will continue our travels in Part II, May Journal.)

Bill Shaver, Dip'81, had hoped to be back to celebrate his 10th anniversary with fellow classmates at Reunion last September; instead, he's on a tanker doing a tour of duty for the Military Sea Lift Command Atlantic, but he did enjoy some shore leave last summer. It was rather a special leave; he had been serving aboard the USNS Comfort, a 1,000-bed hospital ship which had been in the Middle East during the Persian Gulf War. The Diploma Program may not turn out too many sailors but this one remembered his Dip background at least once while in the Gulf; he grew tomatoes hydroponically and was the envy of the rest of the crew eating in the mess! That was one of the lighter moments in a part of his life that he would rather forget. "Living on the edge of oblivion for a period of time isn't easy on anyone," he said.

Fortunately, the ship's state-of-the-art facilities were hardly used; several burn victims and a few other accident cases were treated. Their worst fear, chemical warfare, never materialized.

The pollution in the Gulf, on the other hand, was hard to witness. "Once the oil well fires started, each day turned into a hazy night," Bill said. "You could see the glow of the fires through the haze. The ship, everything, was coated with soot. The deck hands would do wash down two or three times a day. The oil slicks were also pitiful to see, and of course, we had to be very careful of mines. The Canadian ships were our escort vessels, and they always kept us in sight."

While home, Bill managed to see fellow classmates Mike Bleho, Barry Jaquith, and Steve Horn. He and Steve went down to Prince Edward Island to go lobster fishing with Barry Murray. Bill said that coming to Macdonald was probably one of the best moves he ever made. "It taught me how to think and how to study, and I made some good friends."

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The Quebec Women's Institutes

Semi Annual Board Meeting

Doris Stevens, Provincial Treasurer, presenting the Frances Taylor Memorial Bursary to Karen MacKay on November 15 at the 20th annual award's night at the Alexander Galt Regional High School in Lennoxville. Karen is the daughter of Mrs. Frances MacKay, Brompton Road WI Secretary. She is attending Champlain CEGEP in Lennoxville and plans to have a career in Law.

The fall board meeting of the Quebec Women's Institutes was held at the YWCA in Montreal in October. President Florence Ellerton welcomed the members of the Executive, the Provincial Conveners, and County Presidents. All participated in making decisions affecting the QWI during the next three years.

Some proposed projects from the Provincial Conveners were:

- Find an entrepreneur in your area. How did he or she take an idea and form a successful business venture?
- Find out what is happening in schools regarding grading program, awards given, and why.
- Safe food, read labels. Safe food for people with allergies.
- Poster competition re the environment.
- Safety – a video will be available.
- Plant a tree for each member of the family.

We will be hearing more about these projects from our conveners.

The new triennium for the Federated Women's Institutes of Canada was planned at a FWIC Board Meeting. The theme is "Today's Families, Tomorrow's Future." This will bring us to 1994 "The Year of the Family" and the convention in Nova Scotia.

Plans were made for this spring's annual convention at Macdonald. The theme is "Building for Tomorrow's Family." Interesting workshops are planned.

Upcoming Events: Pontiac County is planning a rally and Gaspé County is to receive an Executive visit.

Carol Petch
QWI Publicity

Mrs. Grace Taylor
Agriculture Convener

I was born Grace Larivière and grew up on a farm not too far from Richmond. I attended Kingsey Consolidated School and later graduated from St. Francis High School.

I married Orvis Taylor, and we live on a century farm a few miles from Richmond. It was a small dairy farm until two years ago; now we have a few beef cattle. We have six daughters that are married and have 14 grandchildren. Two daughters live in the Richmond area, one in Montreal, one near Ottawa, and two in Mississauga. They all enjoy coming home to the farm for holidays.

I have been a member of the Spooner Pond WI for 43 years. During that time I have been President, Treasurer, and have held most convenerships. I am now serving my third term as President. I have been Citizenship Convener, Treasurer, and President at the County level.

As well as WI work, I am a QFA member and a Director in the Ladies Department of the Richmond Fair Board. I am also active in the United Church, serving as Treasurer of the General U.C.W. and President of the U.C.W. Group. I enjoy quilting, sewing, knitting, and gardening.

As Provincial Agriculture Convener, I attended the National Farm Women's Conference. I found it most interesting and look forward to the rest of my term as Agriculture Convener.

Scholastic Awards Banquet

Cynthia Baird of Murdochville was proud to receive the Frederica Campbell MacFarlane Prize from Hazel Hunter Thomas at the Awards Banquet at Macdonald.

On November 7, 1991, the annual Scholastic Awards Banquet was held in the Centennial Centre on the Macdonald Campus. Our President, Mrs. Florence Ellerton, was unable to attend, and I was asked to represent the Institute at this prestigious affair and to present the following prizes and bursary.

The recipient of the Frederica Campbell MacFarlane Prize was Cynthia Baird, a second-year student in the School of Dietetics and Human Nutrition. Cynthia is from the town of Murdochville where her father is employed in the mining industry and her younger brother still attends school. When she finishes her studies, Cynthia hopes to enter the nutrition field in the administrative side of the science.

Nathalie Simoneau was awarded the Mrs. Alfred Watt Memorial Prize. As this was the

second time that she had received this Prize, Nathalie was particularly grateful to the WI.

The Edna L. Smith Memorial Bursary was presented to Ulrich Bingelli who is in his second year of the Diploma Program. Ulrich told me that he is also learning English at Macdonald and is very pleased. Ulrich comes from Stoneham, north of Quebec City, and is the eldest and only boy with three younger sisters. His family own a large dairy farm, and he plans to apply the knowledge acquired at Macdonald to the operation of this farm after his graduation.

I enjoyed being with these students – they were so keen and vibrant. It was a very pleasant evening and a memory I'll treasure for some time. My prayers are that these students will succeed in all their endeavours.

Mrs. Hazel Hunter Thomas
Provincial Convener
Canadian Industries

FWIC Board Meeting

The Skyline Hotel in Ottawa hosted a board meeting and workshops for the Federated Women's Institutes of Canada, October 6 to 8. The new FWIC President, Mrs. Jacquelyn Linde, welcomed everyone to the first full board meeting of this triennium, 1991-94.

Everyone enjoyed a workshop on revamping a newsletter by Marilyn Nault from Freelance Editors of Canada. We all learned a great deal about what to put in a newsletter, how to make it interesting, easy to read, and pleasing to the eye.

Business included selecting voting delegates to the Associated Country Women of the World Conference in The Hague in 1992. The Tweedsmuir competition was discussed at length, educational committees presented programs and administration committees were finalized.

One area of great concern was the plight of food producers: dairy and beef farmers, grain farmers, fishermen, and so on. A letter was prepared and delivered to Mr. Mulroney whose representative accepted it.

Copies of a section of a House of Commons debate on Agriculture were given to members. The Hon. Ralph Ferguson (Lambton-Middlesex) had moved: That, in the opinion of this House, the Canadian dairy and poultry industries operate under marketing systems that assure Canadians adequate supplies of safe and nutritious food at fair prices while providing efficient producers with fair incomes and, therefore, the government must immediately provide Canadian producers, operating within these supply management sectors, firm assurances that it is seeking and will continue to seek the strengthening and clarification of Article XI of the General Agreement on Tariffs and Trade (GATT) in the ongoing multilateral trade negotiations and that it will not be party to any agreement that fails to achieve these objectives.

Mr. Ferguson went on to explain the critical situation that exists and spoke of the strange priorities that exist in this country, i.e., it costs $150 a ton to dispose of Toronto's garbage, yet we only pay the farmers $115 a ton to produce the food we eat, for instance wheat.

Mr. Ferguson had recently completed a study called "Compare the Share" which showed a huge increase in the price of food over the last 10 years. These increases have occurred after the food had been sold by the farmer and had already left the processor. A graphic comparison of the cost of various food items clearly indicated that during the 10-year period from 1980 to 1990, farm gate prices increased very little; in fact, in some cases, they declined, while retail prices have increased dramatically. For example, a box of corn flakes increased by 94.5 per cent in that period, soda biscuits by 235 per cent, and sweet cookies by 135 per cent. And get this – a box of whole wheat cereal increased by 194.2 per cent when the price of wheat to the producers was declining.

Mr. Ferguson cited many more discrepancies in food producing – retailing and suggested that the Consumers' Association of Canada could do the consumers a better service by investigating the entire food pricing structure, including distribution and wholesale sectors as well as the retailers, rather than singling out supply management for unwarranted abuse.

The brochure "Compare the Share" was available at the Royal Winter Fair, thus allowing some of the Canadian consumers to know who is ripping them off in their food basket purchases. It is certainly not the Canadian farmers, who are among the most efficient in the world. The brochure can also be had by writing Mr. Ferguson's office in Ottawa. FWIC members representing rural women across Canada are very concerned for the future of Canada's food producers.

The WI Float in the St.Jean Baptiste Parade in Dunham.

Mildred Keith of New Brunswick, Chairperson of the Rural Child Care Committee, was the facilitator for a post survey workshop to establish a plan of action for provinces to implement. The guest speaker was Howard Clifford, National Advisor on Child Care, Health and Welfare Canada. Provincial presidents reported on various plans of action in their provinces.

Representing Quebec at the Board Meeting were: Florence Ellerton of Hemmingford, as Senior Director; Kathleen Rehel of Barachois, as Junior Director, and Pearle Yates, Federated Executive Officer from Quebec.

Sheila Needham
2nd Vice President, QWI

Secretary Micheliene Wormell presents members of the Huntingdon QYF Club with the QWI keeper plaque for winning the barn decorating contest at the Annual Calf Rally which was held in Ormstown.

From the Branches

ARGENTEUIL All branches had interesting programs showing interest and concern for community living. **Arundel** members were presented with pins, including their name and branch. They were happy to have as a guest Josephine Carslaw from a WI branch in Kent, England. They held a quiz on Canadian facts and figures – Canadians create more waste than any other nation, hence the need for an interest in recycling. **Brownsburg**: Maple syrup from member Mary McOuat's grove received prizes at Williamstown fair. Congratulations. **Dales-**

Flora Rhicard, a long-time friend and former neighbour, was delighted to present Iola Stote with her Life Membership Certificate and pin at a recent meeting of the Stanbridge East WI.

ville-Louisa: Guest speaker, Mr. Serge Breault, is the representative from Lyosan, Lachute, where freeze dried products are manufactured. **Frontier**: Guest speaker, Donna Clark, showed slides and talked on student exchange in Switzerland. **Jerusalem-Bethany**: a report was given on

Teachers Class of '41 celebrated their 50th Anniversary at Macdonald last September. Four members of the class were also WI members, l to r, Hazel Meyer Swail, Gwenyth Shaw Strutt, Muriel Murphy Bertrand, and Eileen Holmes Colton.

their 4-H display shown at Lachute Fair Grounds. Speaker Geraldine Pouch, animator for Laurentian Literacy Council, gave interesting information. **Lakefield** members had Mr. Armand Lono, Director of Kanark Temple, Montreal, talk on the Shriner's Hospital in Montreal, which is the only hospital in Canada specializing in orthopedic diseases in children. They have recently completed a total reconstruction and up-dating program which has made it one of the most modern hospitals of its kind in the country. It has one of the leading medical genetics and bone and cartilage physiology research units in North America. **Lakefield-Mille Isle** WI members are giving worthwhile assistance in their community to 4-H club and cheer baskets for shut-ins. **Pioneer** support the 4-H club, donate to the Patrick Seguin Fund (a muscular dystrophy patient) and had Beverley Morrison, County President, as guest. **Upper Lachute East End** were guests of **Grenville** branch where the speaker was Laurie Piper, Assistant Recreation Director of Hawkesbury, who spoke on "fitness for all ages." Congratulations to their President, June Skinner, who won highest points in the WI handicrafts division at the Lachute Fair. Congratulations also to the members, as a group, who made the beautiful branch display, winning first prize. "Grandmothers Evening" was enjoyed and also guest speaker Ethel McGibbon whose subject was antiques.

BONAVENTURE Port Daniel: At the semi annual convention, senior member, Eliza Assels, read a moving poem "There is a Time" and was later presented with an Abbie Pritchard Throw by Anna Sweetman, President of the branch, and Bertha Hays, County President. The School Fair, sponsored jointly with **Marcil**, which has been held annually since 1949, established a record – 31 children, who had 9 by 12 gardens, brought in a record number of exhibits. Marcil members visited the British Heritage Centre, New Richmond. Had a booth at local fair and raffled a grocery basket. Guest speaker, Lorne Hayes, spoke on teaching programs on Indian reserves in Quebec.

Florence Blanchard of Spooner Pond WI receives her Life Membership Pin and 50-year bar from Doris Stevens, Provincial Treasurer.

MEGANTIC Inverness: As their World Food Day Project, members served lunch to 45 people from Wales Home who were enjoying a foliage tour of the district. Motto: "If my mind can conceive it and my heart can believe it, I know I can achieve it." An inspiration for all WI members. Members learned a craft – how to make small decorative boxes from old greeting cards. Let's have them teach us this at provincial convention! **Kinnear's Mills**: Canada Day celebrations were a great success with members and their families enjoying games for the children and a barbecue for all. School Fair trophy was won by Michelle Martineau. President Joy Nugent presented Helen Lowry with her 25-year pin. Helen is a loyal and valuable member. Congratulations, Helen. Members were pleased to welcome a new member, Hélène Doré Nugent. The two county

branches held their semi annual in October and dealt with regular business. Fun and friendly competitions are held and the auction of the goods boosts the county funds.

MISSISQUOI Stanbridge East is celebrating their 70th anniversary. A bus trip to Canadiana Village, Rawdon, was part of their celebration. Part of proceeds from lunch served at semi annual in September was sent to ACWW for Women Feed the World. Book prizes were awarded to students in grades I to VII, Butler Elementary School, Bedford.

MONTCALM Rawdon: Twice monthly, branch serves courtesy meals to about 20 people who live alone or are shut in. This busy branch had their annual tea and sale and netted a good profit. The scholarship of $250 was won by Kelly Owen and the bursary of $200 by Isabelle Lavoie, Joliette High School graduates who are continuing their education in CEGEP.

PONTIAC Wyman and **Bristol** branches sponsored a home beautification contest for the last two years. Proceeds went to the Pontiac Community Hospital.

SHEFFORD Granby Hill had their neighbourhood picnic in August. These yearly picnics have been going on for over 70 years; started by families of Granby Hill and then taken over by the WI. There were 63 attending, ages from two weeks to the 80s.

SHERBROOKE At November county meeting reports were given on School Fair and the semi annual in Montreal. A large number of knitted items were turned in for the Wool Gathering Project with the CBC. Ascot gave a donation to the Hot Lunch Fund of Lennoxville Primary School. An auction was held for World Food Day. Belvidere held its 75th anniversary on October 7 at the Hut, Lennoxville. It was a gala affair with invited guests and a delicious supper catered by the Legion Ladies Auxiliary. A highlight of the evening was the presentation of a 50-year-pin to Mrs. Myrtle Pitman

Life Memberships were presented at a Brompton Road meeting. Left to right, Irene Decoteau, June Westman, County President Dorothy Marlin, who presented the Life Memberships, Mary Decoteau, Eunice Brown, and Branch President Edna Hatch. Absent from the photo is Greta Billings who also received a Life Membership.

by branch president, Jessie Moore. Program included a history of the branch followed by a musical hour and singing of old songs. The anniversary cake was donated by Mickie Povey. **Brompton Road**: A student bursary was presented on Awards Night at Alexander Galt. Citizenship Conveners of other branches were guests at November meeting. **Lennoxville** had Joyce Booth, a member of Citizens for Responsibility, as guest speaker. Topic was the James Bay 2 Project and how the lives of the Indians will be affected. A bursary to be presented to a level 5 student. Guests from l'AFEAS were also present. **Milby** held two card parties as fund raisers and a memorial donation was sent to Sherbrooke Hospital and donations were also given to World Food Day and ACWW. A demonstration on making home decorations from dried flowers was given.

At the 75th anniversary celebrations of Belvidere WI, l to r, Margaret Kinkead, Kathleen Reid, Mickey Povey, Sherbrooke County President Dorothy Marlin, Belvidere Branch President Jessie Moore, Mina Morrison, Irene Paige, Dorothy Montgomery, and Margaret Smart.

Mrs. Lulu Eagles, Wakeham Branch, Gaspé County, receiving her 50-year pin from Mrs. Jessie Clark.

Dates to Remember

April	8	Clarendon's 75th Anniversary
	9	Pontiac Rally
	24	Chateauguay-Huntingdon County Annual Meeting
	24	Gaspé County Annual Meeting
May	8	All Handicraft projects must be in Provincial Office
May	11 to 14	Annual Convention, Macdonald Campus (11, Executive; 12, Board; 13 & 14, Open Convention)

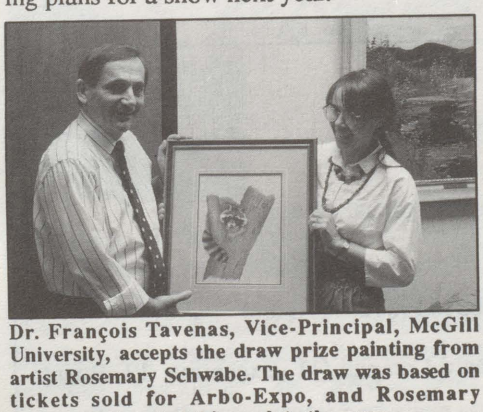
Newsmakers

On Campus

Distinguished visitors at Macdonald recently were the Earl and Countess of Erroll, seen here with Dr. R.B. Buckland, Dean of the Faculty of Agricultural and Environmental Sciences and Vice-Principal, Macdonald Campus. The Earl and Countess, who were in Canada to be guests of honour at the St. Andrew's Ball in Montreal in November, have country property in Great Britian and visited Macdonald to learn more about Canadian agriculture in general and greenhouse production and the cloning of plants in particular.

Arbo-Expo Benefit

An extremely successful art benefit exhibition was held in Baie d'Urfé last November with one third of the proceeds going to the Morgan Arboretum. Three members of the Board of Directors, A.R.C. Jones, Liz Morgan, and Renata Van Der Grinds, were part of the steering committee. Some 58 artists exhibited their works; the artists' committee chairman was Helmut Gerth, who is well known for his watercolours of Arboretum scenes. The success of this Arbo-Expo has the committee already making plans for a show next year.



Dr. François Tavenas, Vice-Principal, McGill University, accepts the draw prize painting from artist Rosemary Schwabe. The draw was based on tickets sold for Arbo-Expo, and Rosemary generously donated this work to the cause.

Off Campus

Mike MacDonald, Dip'91, and his 717-pound giant pumpkin. The fourth largest in the world in 1991. He also placed first at the provincial championships at Botanical Gardens in Montreal.

J. DOUGLAS MACKECHNIE, BSc(Agr) '50, received the Canadian Association of Animal Breeders' Award of Merit at the CAAB Annual Convention in Niagara-on-the-Lake, Ont. Doug retired last June from his position as Manager, Dairy Cattle Improvement, after 18 years of service with Agriculture Canada. Doug was known to many as the Chief of R.O.P. Dairy, a position he held for 11 years. To many Ayrshire breeders he was known as Secretary-Manager for 17 years.

Doug worked for the Extension Service of the Ontario Ministry of Agriculture and Food for four years after graduating from Macdonald and then accepted the Secretary-Manager's position for the Canadian Ayrshire Association in 1956. In 1973 he took over the management of the Agriculture Showcase Herd and in 1976 also looked after the beef herd. In 1977 he succeeded Dave Lambroughton as Chief of R.O.P. Dairy.

A major highlight in his career was the growth of the R.O.P. program where record enrolment of herd and cow numbers resulted from his leadership. Doug directed the transfer of the federal milk recording program to the provincial organizations. He helped establish and write the constitutions for many committees which deal with dairy cattle improvement such as the Canadian Milk Recording Board and the Genetic Evaluation Board.

The MacKechnie family is from Pontiac County in Quebec. Doug's brother, Ronald, still milks the Bonnieshade herd of 65 Ayrshire cows. The herd has been on official milk recording since 1923. Doug and his wife, Helen, have four children. Peter and Steven are Carleton University graduates and daughter, Nancy, is a student there. Daughter, Kathy, is a student at McGill in Physical Education. (Thanks to Gloria Sola in Ottawa for this report.)

JOHN S. BUBAR, BSc(Agr)'52, PhD'57, retired last July from his position as professor in the Department of Plant Science at the Nova Scotia Agricultural College. John Bubar joined the staff at Macdonald, working mainly with birdsfoot trefoil. He had been at AC since 1967 and served as department head for 14 years.

The Shepody

Two interesting items crossed the Editor's desk: one was a Press Release from Agriculture Canada, and I quote briefly from it.

Agriculture Canada has earned $20,000 in royalties from McCain Foods as a result of one of the government's first ventures into Plant Breeder's Rights. McCain Chairman Harrison McCain presented the cheque to Deputy Minister Jean-Jacques Noreau at a reception for Agriculture Canada and McCain personnel. The royalty payment stems from assignment to McCain Foods of certain rights in Europe to the potato variety Shepody by the government in 1984. From an initial 10 tubers, McCain used rapid multiplication methods in greenhouses to increase the supply of Shepody to commercial volumes. McCain seed companies sold the first 90 metric tons of certified seed in 1989. In 1990 more than 860 metric tons were sold, and sales increased in 1991.

An excellent processing variety, the Shepody was originally developed under the direction of DR. DON YOUNG [BSc (AGR)'52] at the Agriculture Canada Re-

Mrs. Jean Douglas presenting the 1991 C. A. Douglas Award to Arthur Pick, BSc(Agr)'81, at the Nova Scotia Agricultural College Alumni Banquet. Mr. Douglas was an outstanding extension worker during his career with the N.S. Department of Agriculture, and the award in his memory was initiated in 1984. Arthur Pick joined the Extension Services of the N.S. Department of Agriculture in 1981 and has worked as a regional 4-H rep. In 1986 he became the ag rep for Lunenburg and Queens counties. He will use his award to upgrade his education and has been accepted into the Masters of Agriculture program at the University of Alberta. He will be conducting research in the area of agricultural extension.

search Station in Fredericton. The name "Shepody" is taken from the name of a iver in southeastern New Brunswick.

Dr. Young, now a consultant to McCain Foods following his retirement from Agriculture Canada, spoke at the reception, hailing the international success of the Canadian-developed Shepody potato as an outstanding example of cooperation between government and the private sector.

In his remarks Harrison McCain urged the funnelling of royalty payments back to government potato variety improvement programs and breeding efforts in Canada. With the success of Shepody and continuing emphasis on research, he said, Canada has the opportunity to become a major player in international potato markets.

McCain continues to conduct extensive adaptation trials on Shepody around the world, and it is grown in all countries where McCain has operations. Shepody seed has been supplied to breeding stations in Holland, Great Britain, and Germany. The variety is being grown in Turkey and the USSR and seed has also been distributed to Austria, Switzerland, Italy, Egypt, Hungary, Norway, Sweden, Portugal, and Yugoslavia. The volume of Shepody seed sold by McCain is expected to triple in the next two years.

The other item, from *Farm Focus*, September 25, 1991, stated that the Shepody potato and the breeders who created it were honoured at the 36th annual meeting of the Canadian Society for Horticultural Science in Fredericton when Shepody was named the outstanding cultivar. T.R. Tarn and H.T. Davies were the other two breeders.

(Mr. Harrison McCain received an Honorary Degree at Convocation at Macdonald in 1991. Dr. Don Young is a member of the Faculty of Agricultural and Environmental Sciences' Advisory Board.)

ROWAN LALONDE, BSc(Agr)'74, the Canadian Dairy Commission's domestic marketing director, has been seconded to Agriculture Canada to work in the special projects section of its dairy division.

Deceased

ROBERT FLOOD, BSc(Agr)'35, of Waterloo, Que., on October 19, 1991. A good friend of Macdonald, it was requested that In memoriam donations be made to the Alma Mater Fund, McGill University.

RUTH D. (GOLFMAN) ORNSTEIN, BHS'41, of Montreal, Que., on November 15, 1991.

HARRY E. MOORE, BSc(Agr)'51, of Foster, Que. No further information.

JOAN NESS, Teacher's '51, of Howick, Que., on November 4, 1991.

R.E. MICHAEL ROUTLEDGE, BSc(Agr) '52, of Fredericton, N.B., on October 19. 1991. He had been with the N.B. Department of Agriculture and, on his retirement in 1988, was manager of the information division.

RENATE LISELOTTE COMMON, wife of the late Haddon Common, Emeritus Professor of Chemistry, on October 20, 1991, in Toronto, Ont. Remembrances may be made to the R.H. Common Memorial Fund c/o the Registrar, Macdonald Campus, Ste. Anne de Bellevue, Que. H9X 1C0

Patricia Marie Harney

Dr. Patricia Marie Harney, BSc(Agr)'50, MSc(Agr)'59, PhD'63, passed away December 19, 1991, after a short illness at her home in Bellivieu Cove, N.S. She was a Lecturer in the Department of Horticulture from

(Continued from page 23)

Fortunately for us, Jean will also be returning to visit on occasion. She certainly plans o come and see her children and new granddaughter, Kelsey. She plans, too, to eturn for the Scholastic Awards Banquet to present to a worthy student the new Jean Brown Prize, which was set up (and may e added to) upon her retirement.

How do you sum up 18 years of working with "the cream of the crop?" "I have njoyed the job tremendously," Jean said. One would have to go a long way to find his type of position. It is unique; at times rustrating, always interesting. Working for he Students' Society one might drop from overwork and long hours (those 7:30 a.m. Council meetings) but never, never from boredom!"

Message from Jean

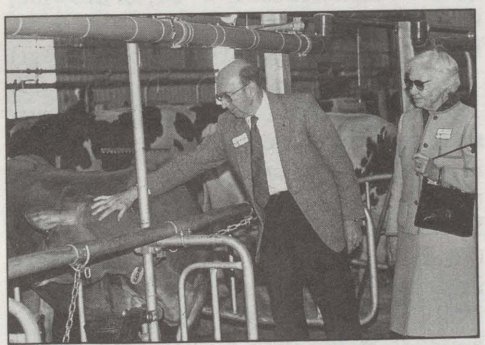
Many thanks to all students and staff who participated in making my "last party" at Mac a memorable one. The efforts of those people who had travelled from far-away places were greatly appreciated, as well as messages from those who could not attend. My thanks to everyone for the cards and gifts and particularly the prize, which I especially value. The Bateman print will be treasured as it is something I have always wanted.

1954 to 1963 during which time she obtained her MSc and PhD in Genetics under the supervision of Professor William F. Grant.

After receiving her PhD she went to the University of Guelph as an Assistant Professor and rapidly rose through the ranks to Professor of Ornamental Horticulture and Plant Breeding in 1972. Pat was an authority on the phylogeny and genetics of the geranium (*Pelargonium* X *hortorum Bailey*) and had a number of graduate students obtain their degrees using breeding, tissue culture, chromatographic, and mutagenesis techniques. One of her last papers before she took early retirement was on factors which influenced the production of phenolic exudate by geranium explants.

Pat had a love of literature and was an avid reader. Her good humour will be missed by her many friends. Her mother will be well remembered as an artist and the popular Manager of the Food Service operation at Glenaladale during the years Pat was at Macdonald.

D. LORNE GALES, 1911 – 1991



Lorne and Isabel Gales at the official opening of the new cattle facilities in 1987.

The man known to many as Mr. McGill, D. Lorne Gales, died suddenly of a heart attack on October 8, 1991, at the age of 80. He first arrived at McGill in 1928 and since that time he had a lifelong commitment to McGill, its students and graduates. As an undergraduate, Lorne served as president of the Students' Society and joined the university's rowing club, competing for Canada in the 1930 Empire Games. Lorne Gales received his BA in 1932 and his BCL in 1935 and was called to the bar in 1936. He enlisted in the Royal Montreal Regiment in 1940. In 1946, having decided that he preferred working at McGill to practicing law, Lorne Gales began his long and distinguished service to the university, first as field secretary for the Graduates' Society where he helped increase alumni branches from 17 to 52. He became general secretary to the Society in 1948 and executive director in 1964. Though officially retired in 1976, Lorne continued to give advice and his services to McGill.

In recognition of his contributions Lorne Gales earned the Graduates' Society Gold Medal Award of Merit and was the first Canadian to receive the Columbia University Alumni Association Medal for Service to Higher Education. In 1979, McGill awarded him an honorary Doctor of Laws.

Lorne Gales was a familiar name on both campuses: downtown McGill and Macdonald. A resident of Hudson, Lorne shared his wife Isabel's interest in gardening and nature. Over the years Lorne was in touch with many Mac people, sharing information with them on a wide variety of subjects. He was often seen leading special visitors on tours of the campus, and he played an important role in bringing the needs of Macdonald to the attention of his late friend and philanthropist R. Howard Webster.

One of Lorne and Isabel's sons, Robert, studied Agriculture here and graduated with a BSc in 1968. Bob is Executive Director of the respiratory health network at the Montreal Chest Hospital. His wife Dr. Katherine Gray-Donald is a professor in the School of Dietetics and Human Nutrition.

Macdonald graduate, J. William Ritchie, BSc(Agr)'51, of Halifax, N.S., speaks for many when he remembers his friend and associate:

"The Macdonald Clan has lost a member and a friend and is in mourning. Lorne Gales was a long-time friend and supporter of Macdonald, and he will be sadly missed by all who knew him.

"My first recollections of Lorne go back to the 1948 and 1949 years when he appeared on our Campus to enlighten the undergraduates as to the activities, services, and functions available to them after convocation, i.e., life in the Graduates' Society. The result of his time and effort was the 100 per cent enrolment in the Society of the Class of '51. This was the first time that a graduating group at Macdonald or McGill had joined en masse.

"Lorne was an active, intelligent person who had varied and widespread interests. The warmth of his personality, his attention to background and detail, together with his passion for McGill and all of her parts, his continuing efforts on her behalf, not only contributed to the growth of the university directly, but also led to Lorne being dubbed, far and wide, as Mr. McGill.

"He was witty, charming, a story-teller without peer, and was possessed of a rather remarkable memory which permitted him to recall instantly the names of graduates and friends from the world over.

"Lorne's interest in Macdonald extended beyond the undergraduates, the Class meetings, and our attendance at Branch meetings wherever held. He had a lifelong interest in the Campus, the Farm, and the Arboretum.

"In short Lorne was a valued and dear friend to Macdonald and to many of us personally. Our sympathies are extended to Isabel and their family on his passing.

"He will be missed. His 'joie de vivre' and the twinkle in his eye will always remain with us. Au revoir, Lorne."

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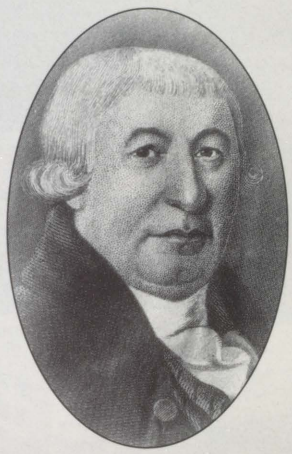

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